



3 1761 08091848 5



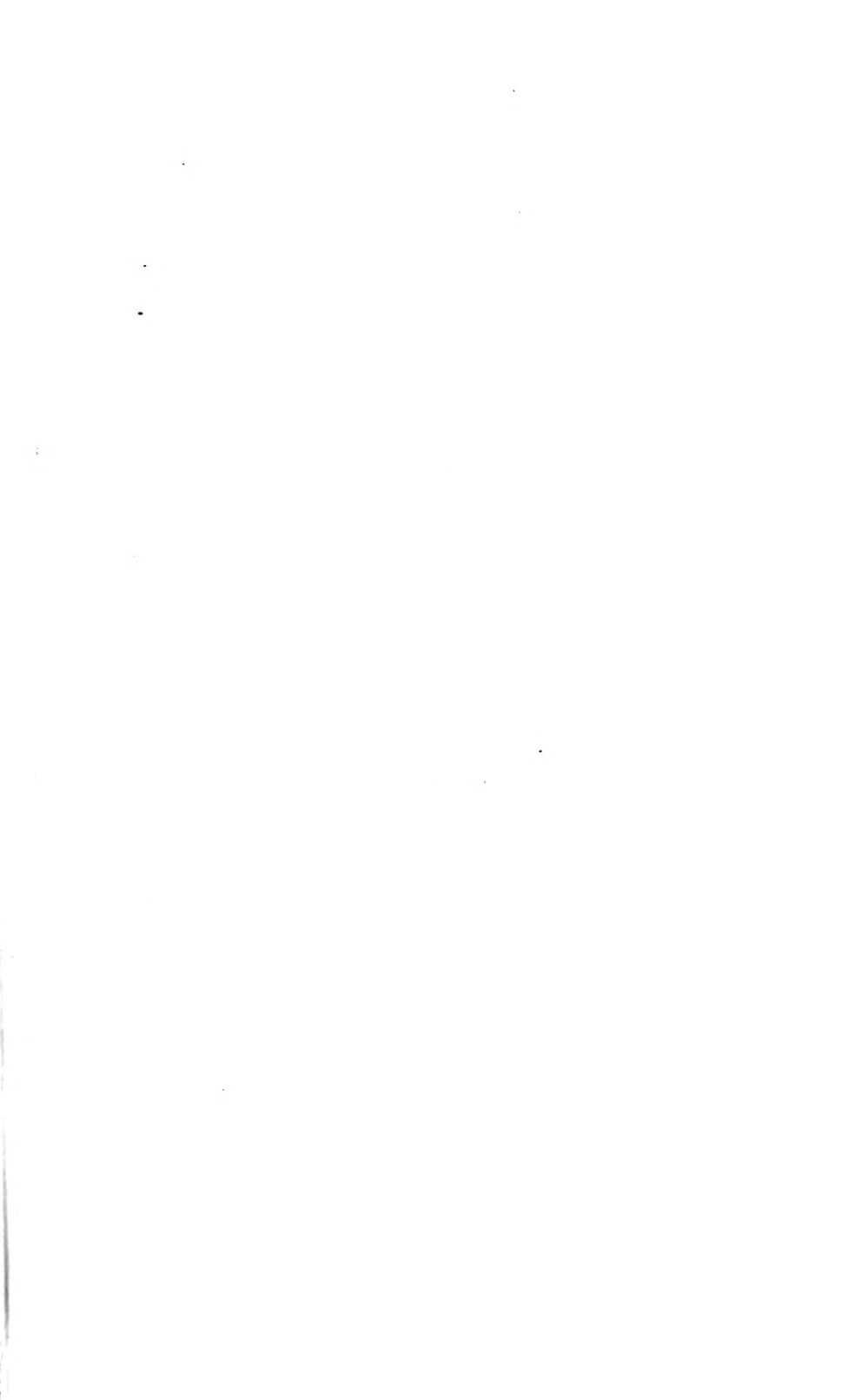
HG

8754

15

Index

v 1-40



THE
JOURNAL
OF THE
INSTITUTE OF ACTUARIES
(WITH WHICH IS INCORPORATED
THE ASSURANCE MAGAZINE).



INDEX

TO

THE FIRST FORTY VOLUMES.

LONDON:
CHARLES AND EDWIN LAYTON,
56, FARRINGDON STREET, E.C.
1907.

87529
1016108

LONDON :

PRINTED BY CHARLES AND EDWIN LAYTON,

56, FARRINGTON STREET.

INTRODUCTION.

THE 40th volume of the *Journal of the Institute of Actuaries* was completed by the publication of the number dated October 1906. A Combined Index had been prepared on completion of each previous set of ten volumes, as follows: (*a*) an Index to the First Ten Volumes, published in 1864; (*b*) an Index to the First Twenty Volumes, compiled by Dr. T. B. SPRAGUE as Editor, and published in 1883; (*c*) an Index to Volumes XXI to XXX, compiled by Mr. G. H. RYAN as Editor, and published in 1896. Having regard to the great practical inconvenience attending the reference to two, or more, Combined Indexes, and also to the fact that the Index to the First Twenty Volumes had for some years been out of print, the Council of the Institute authorized the present Editor to prepare for publication a Combined Index to the whole contents of the First Forty Volumes.

The labour of compilation has been considerable, but has been materially lightened by the fact that a complete Card Index had been prepared, under the authority of the Council, of the contents of the *Journal*, for reference by Members in the Hall of the Institute. This Card Index included the whole of the entries in the published Indexes to the First Twenty Volumes, and to Volumes XXI to XXX; and, in addition, a complete Index to the contents of each later number, up to the last current issue. The principles and methods followed in the published Index to Volumes XXI to XXX, which also formed the basis of the Card Index to later volumes, were somewhat more extended in scope than those followed in the Combined Indexes to earlier volumes,

more particularly as regards the inclusion of incidental references, in Papers, and Discussions thereon, to subjects not directly associated with or suggested by the title of such Papers. It was therefore decided that the whole contents of the First Twenty Volumes should be carefully read through, and entries made, in respect of such further items and topics as appeared to fall within the more extended scope of the combined Index to the later volumes. The result of this revision was a considerable extension of the Card Index, so far as the First Twenty Volumes were concerned; and it is hoped that a fairly uniform standard has thus been maintained, throughout the Index to the Forty volumes, and that the value and usefulness of the whole Index have thus been increased.

The Card Index, thus extended and revised, was copied out for the printer, and an independent and detailed examination of the proof-sheets was then made, especially as to secondary or subsidiary cross-references, which have been freely interpolated, wherever their insertion appeared to be necessary, or likely to increase the practical utility of the Index.

As the general scheme of the present Index closely accords with that on which the Index to Volumes XXI to XXX was prepared, and with which students and readers of the *Journal* are already familiar, it is not necessary to set out in detail the principles followed in the present compilation, but it will be sufficient to summarize the leading points, and to refer to some natural developments made in the present Index.

The main entries, whether relating to Authors or Subjects, are throughout printed, under a single alphabetical arrangement, in heavy (clarendon) capitals; whilst the smaller heavy type ("lower case" clarendon) is reserved mainly (*a*) under each author's name, for his principal contributions, usually by their full titles; (*b*) under each principal subject, for the names of authors furnishing leading contributions thereon; (*c*) under the main headings of subjects of great generality, such as Annuities, Colonial Intelligence, Foreign

Intelligence, Graduation, Institute of Actuaries, Original Tables, &c., for subsidiary headings, arranged alphabetically. Under the main reference to each Author, the whole of his contributions have been specified in chronological order, that is, according to successive volume and page; but later references to a subject already treated, whether by the author, or by way of comment or discussion by others, are appended, in ordinary type, to the first entry on the subject. Minor contributions are entered, both under Authors and Subjects, in ordinary type, as are subsidiary and cross references to subjects, under various headings. In respect of particular subjects, the main titles of which are printed in large, or small, clarendon type, the detailed entries are made in ordinary type, in chronological order; but, as in the case of entries under Authors, subsequent references are appended to the original entry.

Certain important subjects have, in the present Index, been somewhat more fully differentiated than in previous compilations. Thus, the entries under "Acts of Parliament" have been discriminated according to whether (1) the full text of the Act, (2) the text of certain sections, or (3) references only, are included; the items in each of these three divisions being placed in order of volume and page. The headings "British Offices' Experience" and "British Offices' Life Tables" appear for the first time in the Combined Index, and the entries have been made as inclusive as possible. Under the heading "Graduation", a full list of the Mortality Tables graduated is included, in alphabetical order. The classification of the items indexed under "Institute of Actuaries" has been considerably extended, as also of those under "Legislation" and "Marriage." The important subject of "Mortality" has been indexed in four divisions, and the individual references have been carefully analyzed, and subsidiary references freely inserted. The entries under "Original Tables" have involved much careful thought, and the selection and discrimination of appropriate items has not been an easy task, as the great majority of the contributions to the *Journal* are accompanied

by Tables, more or less of an original character. The plan finally adopted was to include, under the heading of "Original Tables", all Tables, specified in two divisions, under "Author" and "Subject", which seemed clearly to fall under this title, and appeared likely to be referred to by, or to be useful to, the student or actuary. The entries under the heading of "Premiums" have been extended, and further differentiated; and a new heading "Premium Rates, Tables of" has been introduced. The entries under "Reviews" are arranged in order of volume and page, according to the name of the author of the book reviewed; the name of the reviewer, where known, being also added. "Translations" include all contributions specified as such, with the name of the translator, where announced. The entries under the important heading "Valuation of Life Policies" have been arranged in three divisions, and the individual entries in each division have been carefully scrutinized.

Under the heading "Bonus (or Investigation) Reports", there have been set out the Valuation Reports of Companies, Funds, &c., included in Volumes XIV to XXII of the *Journal*, but mostly discontinued after the passing of the Life Assurance Companies Act, 1870. The Annual Reports of British, Colonial, Indian and Foreign Companies, &c., which appeared only in the first five volumes of the *Assurance Magazine and Journal of the Institute of Actuaries*, have, however, been omitted from the present compilation. These Reports relate exclusively to the years 1848 to 1855, and are in respect of Companies, the majority of which have long ceased to have a separate existence. It is thought that such references can only have an historical interest, and the student who desires, for this or any other purpose, to peruse these ancient records, is referred to the heading "Reports of Companies" on pages 125 to 130 of the Index to the First Ten Volumes, or on pages 62 to 65 of the Index to the First Twenty Volumes; or to the Card Index, in which the full record of these items has been retained. The entries under the headings "Cattle Insurance", "Fire Insurance", "Hail

Insurance", and "Marine Insurance", contained in the earlier volumes of the *Journal*, have also been omitted from the present Index.

The Editor desires to express his deep sense of indebtedness to members of the Council, and others, who have kindly devoted much time and labour to the scrutiny and revision of proof-sheets of the Index, and made valuable suggestions as to additions or corrections, which have been given effect to, in all cases where they appeared to be consistent with the general scheme of the Index. The best thanks of the profession are also due to Mr. GEORGE GREEN, M.A., F.I.A., and Mr. S. H. JARVIS (Assistant Secretary of the Institute of Actuaries), who were appointed by the Library Committee, with the approval of the Council, to read through and scrutinize in detail the contents of the First Twenty Volumes of the *Journal*, so as to bring the Combined Index to a uniform standard throughout, and who have devoted ungrudging time and labour to this important work, and to the general revision of the Index.

In a work of so much magnitude and labour, it is quite inevitable that errors, both of omission and commission, as well as inconsistencies in plan and method, will to some extent have survived the careful processes of scrutiny and revision adopted. It is however hoped, with some confidence, that the Index now issued will on the whole be found adequately to meet the needs of the profession, and, as regards systematic arrangement and accuracy, to approximate to the high and classical standard, set and maintained by the compilers of previous combined Indexes.

THOMAS G. ACKLAND,

Honorary Editor of the Journal.

Chairman of the Library Committee.

September, 1907.

JOURNAL OF THE INSTITUTE OF ACTUARIES.

FIRST published in September 1850, by Mr. CHARLES JELlicOE and Mr. SAMUEL BROWN, as *The Assurance Magazine*. Successive numbers bearing this title were issued in January 1851, and thenceforward quarterly, up to July 1852 inclusive. Adopted by the Institute of Actuaries for the record of their Transactions in October 1852 (vol. iii), and issued from that date, to January 1866 (vol. xii) inclusive, as *The Assurance Magazine and Journal of the Institute of Actuaries*. From April 1866 to July 1867 (vol. xiii) inclusive, the numbers issued bore the title *Journal of the Institute of Actuaries* only. From October 1867 (vol. xiv) to October 1885 (vol. xxv), the combined title *Journal of the Institute of Actuaries and Assurance Magazine* was adopted. In January 1886 (vol. xxv), and in all subsequent issues, the title of *Journal of the Institute of Actuaries* was employed. (See *Journal*, vol. iii, p. 91; vol. xx, p. 118.)

Between September 1850 and October 1906, both inclusive, 226 numbered parts of the *Journal* have been issued, the second number having been published in January 1851, and successive numbers at quarterly intervals, with the following exceptions: There were no numbers published dated April 1881 and January 1883, and the issues of July and October 1885 were combined under one number (138). In July 1891, besides the usual quarterly number, a special part (162) was published "On the German Law of Insurance against Invalidity and Old Age", by T. E. Young. A special double number (205 6) was issued between January and April 1902, "On the Actuarial Aspects of recent legislation on the subject of Compensation to Workmen for Accidents" (Brown Prize Essay, 1900), by John Nicoll; and a special part (212) was published between April and July 1903, "On the Mortality Experience of the Imperial Forces during the War in South Africa (1899-1902)", by F. Schooling and E. A. Rusher. This last-named part has been reprinted for separate sale to Members and the public, and also that issued in October 1888 (No. 150), "On Friendly Societies" (Messenger Prize Essay, 1886), by G. F. Hardy.

A Combined Index to the First Ten Volumes was issued in 1864. A Combined Index to the First Twenty Volumes, compiled by Dr. T. B. SPRAGUE (Editor of the *Journal*), was published in 1883; and a Combined Index to Volumes XXI to XXX, compiled by Mr. G. H. RYAN (Editor of the *Journal*), was published in 1896.

LIST OF HONORARY EDITORS, AND SUB-EDITORS.

Dates of Appointment and Resignation	Names of Honorary Editors	Names of Sub-Editors	Reference in <i>Journal</i>
1851-66	C. JELlicOE	xiii, 386; xxiv, 150.
1866-83	T. B. SPRAGUE...	...	xiii, 386; xxiv, 149.
1883-84	HON. SECRETARIES	...	xxiv, 150.
1884-85	R. P. HARDY	xxiv, 458; xxv, 290.
1885-93	HON. SECRETARIES	G. H. RYAN (1885-8)	xxv, 290.
	" "	H. J. ROTHERY (1888-93)	...
1893	H. J. ROTHERY	E. R. STRAKER	xxx, 579; xxxi, 403.
1893-96	G. H. RYAN ...	"	xxx, 403; xxxiii, 57, 59.
1896-1905	G. KING ...	H. A. THOMSON (1896-1900)	xxxiii, 432; xxxix, 406.
		A. LEVINE (1896-1902)	...
		H. J. BAKER (1901-5)	...
1905	T. G. ACKLAND	J. SPENCER ...	xxxix, 406.

INDEX

TO THE

FIRST FORTY VOLUMES

OF THE

JOURNAL OF THE INSTITUTE OF ACTUARIES

(WITH WHICH IS INCORPORATED
THE ASSURANCE MAGAZINE).

NOTE.—The pages of Part I of the ASSURANCE MAGAZINE, published in September 1850, were numbered from 1 to 121, and those of Part II, published in January 1851, were numbered from 1 to 136. In order to avoid confusion, the references to pages in Part II are, throughout the present index (as in previous indexes), distinguished by the addition of an asterisk to the number of the pages. The letter *n*, when following the number of a page, refers to a footnote on the page indicated. The word *et*, preceding the number of a page, refers to a diagram, or other inset, immediately preceding such page.

- ABACUS**, Description of it, W. T. Thomson, iv, 233.
- ABSTAINERS and NON-ABSTAINERS** from Alcoholic Beverages. Comparative Mortality among, R. M. Moore, xxxviii, 213.
- In the Colonies, A. W. Tarn, xxxiv, 541.
- ACCIDENT INSURANCE**. Position of Companies in relation to their Local Medical Examiners, C. Walford, xxii, 164.
- C. Crawley's "Law of Life Insurance: with a chapter on Accident Insurance." *Review* by G. H. Ryan, xxiv, 136.
- French National Old Age Pension Fund, J. Nicoll, xxxvi, 437, 520.
- The German Law of 1884, J. Nicoll, xxxvi, 440.
- Association in Austria, J. Nicoll, xxxvi, 453.
- Italian National Fund, J. Nicoll, xxxvi, 456.
- ACCIDENT INSURANCE COMPANIES**, Regulations Governing the Conduct of the Business of, in the United Kingdom and other Countries, J. Nicoll, xxxvi, 529.
- ACCIDENTS**, among Miners, T. Y. Strachan, xxvii, 48.
- Compensation to Workmen for, Legislation in the United Kingdom and other Countries in regard to, J. Nicoll, xxxvi, 417.
- (Fatal), in Various Occupations, W. J. H. Whittall, xxiii, 188.
- ACCLIMATISED LIVES**, in the Tropics, G. F. Hardy and H. J. Rothery, xxvii, 189; B. Newbatt, xxvii, 190; T. G. C. Browne, xxvii, 191. *See also* Mortality.
- "ACCOUNT OF PRINCIPLES AND METHODS** adopted in the Compilation of the Data, the Graduation of the Experience and the Construction of Deduced Tables" (British Offices, 1863-1893). *Review* by R. Todhunter, xxxviii, 356.
- ACCOUNTS** (Life Insurance). *See* T. B. Sprague; Board of Trade Returns.
- "ACCUMULATION OF CAPITAL BY THE DIFFERENT CLASSES OF SOCIETY."** (G. R. Porter.) *Review*, ii, 299.
- ACKLAND** (T. G.) On the Graduation of Mortality Tables (new Method of applying Woolhouse's Formula), xxiii, 352. References, J. A. Higham, xxiv, 41, 51, xxv, 22, xxvii, 428, xxxi, 323; Author, xxiv, 50; D. Carment, xxiv, 225; J. Chatham, xxix, 106, 108; R. Todhunter, xxxii, 384.
- The True Measure of the Probabilities of Survivorship between two Lives, xxvii, 157.
- Income Tax on Annuities, xxxi, 81.

ACKLAND (T. G.)—*continued.*

- On some practical applications of simple Interpolation Formulae, xxxii, 286.
- (i) An Investigation of some of the Methods for deducing the Rates of Mortality, and of Withdrawal, in Years of Duration; with (ii) the Application of such Methods to the computation of the Rates Experienced, and the Special Benefits granted by Clerks' Associations, xxxiii, 68, 131. References, R. Todhunter, xxxiii, 273; J. Burn, xxxiii, 278; A. Hunter, xxxvi, 51.
- On different Methods of estimating Ages at Entry, xxxiii, 132.
- On Rates of Mortality and Withdrawal, xxxiii, 362.
- Life Assurance Companies Acts, 1870-1872, xxxv, 150.
- The British Offices Life Tables, 1893: An Investigation of the Rates of Mortality in different classes of the Assurance Experience, and of the resulting Net Premiums and Policy Reserves, xxxvii, 113.
- Further Notes upon the Application of Lidstone's Method to the case of Joint Endowment Assurances, xxxviii, 61.
- Notes on an Approximate Method of Valuation of Whole-Life Assurances, with allowance for Selection, xl, 42. Reference, S. E. Macnaghten, xl, 120.
- Demonstration of Expansion of ${}_t p_x + t - {}_t p_{x+t}$ (OIM Table) in ascending powers of e^r , xl, 77.
- Announcement of Appointment as Official Supervisor of the New Mortality Experience Investigation, xxxiii, 432.
- As Honorary Editor of the *Journal*, xxxix, 406.
- Editorial Remarks:—
- On the Calculation of Contingent Assurance Premiums, when Makeham's Law holds, xxxviii, 372.
- ACKLAND (T. G.) and BACON (J.).** On the Valuation of Whole Life Industrial Assurances with Allowance for Lapses, xxxviii, 539. Reference, G. J. Lidstone, xxxix, 231-5.
- ACKLAND (T. G.) and SANDERS (W.).** A Digest of the Results of the Census of England and Wales in 1901. *Review* (Editorial), xxxviii, 290.
- ACKLAND (T. G.) and SMEE (A. H.).** "Assurance Risks of Warfare." *Review* by H. J. Rothery, xxviii, 463.
- On the Assurance Risks incident to Professional Military and Naval Lives, and the Rates of Extra Premiums which should be charged for such Risks; being extracts from a Joint Report, made in May 1890, to the Board of Directors of the Gresham Life Assurance Society, xxxiv, 358. Reference, J. J. McLauchlan, xxxiv, 262.

ACTS OF PARLIAMENT.(1). *Full text of Act.*

- Policies of Assurance Act, 1867, xiv, 46.
- The Sales of Reversions Act, 1867, xiv, 106.
- Life Assurance Companies Acts, 1870, xvi, 4; 1871 and 1872, xvii, 193; 1870-1872. References, T. B. Sprague, xxiv, 235, xxv, 75; R. Teece, xxv, 351; D. Deuchar, xxviii, 460; G. King, xxix, 498; B. Newbatt, xxix, 537; A. Hendriks, xxx, 276; J. Chatham, xxxii, 393; J. Nicoll, xxxiv, 209; J. E. Faulks, xxxiv, 567, 582; R. Todhunter, xxxv, 1; C. D. Higham, xxxv, 438.
- Victorian Life Assurance Companies Act, 1873, xx, 59.
- Married Women's Policies of Assurance (Scotland) Act, 1880, xxiii, 48. Editorial Remarks, xxiii, 49. Extract from *Scotsman*, xxiii, 51.
- South Australian Life Assurance Companies Act, 1882, xxvi, 24. References, R. Teece, xxv, 356; C. D. Higham, xxvi, 328; Editorial, xxix, 32.
- Canadian Insurance Acts, 1886, xxvii, 459; 1894 and 1895, xxxii, 200, 224. Reference, G. H. Ryan, xxxii, 41.
- Western Australian Life Assurance Companies Act, 1889, xxix, 32.
- Cape of Good Hope Life Assurance Act, 1891, xxx, 244. Reference (Editorial), xxxv, 379.
- South African Republic (Transvaal) Law Regulating Assurance Companies, xxxii, 61.
- Census (Great Britain) Act, 1900, xxxv, 365.
- Census (Ireland) Act, 1900, xxxv, 369.

ACTS OF PARLIAMENT—continued.*(2). Text of certain Sections only.*

- Married Women's Property Acts, 1870, xvi, 19. 1870 and 1882 (clauses relating to Settlement Policies), xxiv, 88. References, T. B. Sprague, xxiv, 77; C. J. Bunyon, xxiv, 82; W. Hughes, xxvii, 58; W. K. Lemon, xxix, 405; A. R. Barrand, xxxiii, 222.
- Tasmanian Life Assurance Companies Act, 1874, xx, 411.
- New Zealand Life Assurance Companies Act, 1873, xx, 442.
- Canadian Life Assurance Companies Act, 1877, xx, 416. Reference (Editorial), xxi, 300.
- Trustee Act, 1888, xxvii, 511.
- Income Tax Act (Schedules of), 1853, xxviii, 287.
- Bankruptcy Act, 1883. Reference, G. J. Lidstone, xxxv, 371.
- Cape of Good Hope Stamps Act Amendment Act, 1887, xxxv, 380.
- Cape of Good Hope Stamps and Licenses Amendment Act, 1898, xxxv, 333.
- Finance Act, 1891, Valuation of Reversions, &c., xxxvi, 81.

(3). References. (See also under (1) and (2) above.)

- Friendly Societies Act, 1875, G. H. Ryan, xxv, 24; W. Sutton (Certification of Amuties), xxvi, 225; G. F. Hardy, xxvii, 254.
- Registration Act, 1836 (Births, Deaths and Marriages in England), A. F. Burrigge, xxv, 87.
- Public Health Acts, 1872-75 (result of, upon Mortality in Early Life), N. A. Humphreys, xxvii, 493.
- Judicature Act, 1873, W. K. Lemon, xxix, 403.
- Settled Lands Act (power of Life Tenant to grant Leases under), H. J. Rothery, xxx, 74; D. A. Bumsted, xxx, 76.
- Indian Coinage and Paper Currency Act, 1893, A. J. Finkelson, xxxi, 413.
- Life Assurance Companies (Payment into Court) Act, 1896, A. R. Barrand, xxxiii, 234.
- Various, bearing on the relation of the Actuarial Profession to the State, J. Nicoll, xxxiv, 158.
- Companies Act, 1862. A. R. Barrand, xxxiv, 425. *See also* xxxiv, 418, xxxv, 49.
- Lord Campbell's Act, 1846, 1864, J. Nicoll, xxxvi, 423.
- Employers' Liability Act, 1880, J. Nicoll, xxxvi, 424.
- Workmen's Compensation Act, 1897, J. Nicoll, xxxvi, 426.
- Notices of Accidents Act, 1894, J. Nicoll, xxxvi, 526.
- Fatal Accidents Inquiry (Scotland) Act, 1895, J. Nicoll, xxxvi, 527.

See also Legislation.

ACTUARIAL ASPECTS of Legislation in regard to Compensation to Workmen for Accidents, J. Nicoll, xxxvi, 417.

ACTUARIAL CONGRESSES. *See International Actuarial Congresses.*

ACTUARIAL ESTIMATES. On the Rationale of certain, C. Jellicoe, viii, 310.

ACTUARIAL JOTTINGS—NOTES. *See Notes and Queries.*

ACTUARIAL SOCIETY OF AMERICA. W. Sutton, xxviii, 171; B. Newbatt, xxix, 4; T. B. Macaulay, xxix, 544; G. H. Ryan, xxxii, 43.

— Report by the Secretary of the, on "The Arrangement of Commutation Columns", xxxiii, 31.

— Decennial Celebration of the, I. C. Pierson, xxxv, 130.

— Regarding the Mortality Investigation instituted by the, D. P. Fackler, xxxvii, 1.

— Experience of 34 Life Companies upon 98 Special Classes of Risks, 1903. *Review* by J. D. Watson, xxxviii, 363.

ACTUARIAL SOCIETY OF EDINBURGH.

— Addresses to the, E. Sang, xv, 257, xvi, 253; T. B. Sprague, xviii, 403; J. Meikle, xix, 268; J. M. McCandlish, xx, 12; S. C. Thomson, xxi, 170.

— Papers read before it. *See* J. R. Macfadyen, xiv, 364; G. M. Low, xviii, 195; D. Deuchar, xviii, 323; W. Evans, xix, 12; J. J. W. Deuchar, xix, 97; J. Sorley, xxi, 192; A. Hewat, xxii, 286; J. Meikle, xxxiii, 385; W. B. Paterson, xxvi, 465. *See also* xxv, 368.

ACTUARIAL SOCIETY OF NEW SOUTH WALES. *See New South Wales.*

"ACTUARIAL TABLES" (W. T. Thomson). *Review*, iii, 340.

ACTUARIES.

- Proposed Bill for regulating the Profession and Practice of Actuaries throughout Great Britain and Ireland, i, 114. Progress of the Bill, i, 261.
- Certificate required to rules of Friendly Societies, iii, 12, xl, 212.
- — For Annuity Tables, xxvi, 225.
- "A Fellow of the Institute" on their Qualification and Enrolment, iii, 332.
- Tests of acquirements advocated by the Institute, iv, 32.
- On some points connected with their education, H. W. Porter, iv, 108.
- The Earlier, J. Nicoll, xxxiv, 161.

See also **Institute of Actuaries; International Actuarial Congresses.**

- ACTUARIES' CLUB.** Position of its Members in respect to the Royal Charter of Incorporation of the Institute of Actuaries, T. B. Sprague, xxiv, 13, xxv, 1.
- Members of the, become Fellows of the Institute by virtue of the Charter, xxv, 4.
 - Particulars regarding Assurances on Female Lives, collected by the, xxix, 75.
 - Reference to, A. Hendriks, xxx, 278.

- ACTUARY,** On the Usefulness of Mathematical Studies to the, T. B. Sprague, xviii, 403.
- What is an? A. H. Bailey, xxiii, 157.
 - The Duties and Status of the, T. B. Sprague, xxiv, 229.
 - The Probable Future of the Profession, T. B. Sprague, xxv, 65.
 - Note on the Word, from Dr. Murray's "New English Dictionary", xxvi, 388.
 - The Origin and History of the Title of, T. E. Young, xxxiii, 480.
 - Origin of the word, J. Nicoll, xxxiv, 158.
 - The Relation of the Actuarial Profession to the State, J. Nicoll, xxxiv, 158, 209.
 - Status and Duties of the, C. D. Higham, xxxv, 445.

- ADAN (H.).** "Are Events resulting from the exercise of the Human Will suitable for the Deduction of Serviceable Probabilities?" (Correspondence with T. E. Young), xxxiii, 523.
- — — Obituary Notice of, xxxvi, 399.

ADDRESSOGRAPH, Reference, J. Chatham, xxxviii, 656.

- ADJUSTMENT FOR EARLY PAYMENT OF CLAIMS,** E. J. Farren, iii, 234; C. D. Higham, xxiv, 76, xxvi, 478; G. King, xxiv, 432; J. Chisholm, xxv, 152.

ADJUSTMENT OF TABLES. *See* Graduation.

- ADLARD (H. T.).** On the Calculation of Deferred Annuities, xxxvi, 389. Reference, H. W. Manly, xxxvii, 206.

ADLER (M. N.). Formula for the Approximate Value of Annuities at Simple Interest, vii, 300.

- Some Considerations on the Government Life Annuities and Life Assurances Bill, xii, 3.
- The Demonstration of Certain Formulæ (Single and Annual Premiums for Whole-life, Temporary, Deferred, and Endowment Assurances), xii, 52.
- On Government Annuity and Assurance Rates and Regulations, xii, 265.
- — — Memoir of the late Benjamin Gompertz, xiii, 1.
- A Method of solving approximately Questions in Compound Interest, without the Aid of Tables, xxiii, 359.
- Correction of Error in the Solution of the Examination Questions, xiv, 242.
- Conditions of his Prize; best answers to Intermediate Examination (April, 1879), xxi, 220.

ADLES (Leopold). Note on the early history of Life Insurance (from Masius's "Rundschau"), iii, 61.

ADMINISTRATION. A Discussion of some points of Life Assurance Administration in respect of which Divergence of Practice exists: A Plea for Uniformity, H. C. Threlton, xxxi, 28.

ADVOWSONS, On the value of, P. Gray, ii, 271.

AFRICA.

See Colonial Intelligence, Foreign Intelligence, and Mortality (2).

- AGE**, Law of the ages at which Life Insurances are effected, S. C. Chandler, Jr., xvii, 56; W. Sutton, xx, 195.
- At Marriage of Husbands and Wives, A. F. Burridge, xxv, 101.
- At Marriage of Husbands and Wives where Marriage is fruitful, S. Brown, iii, 17; J. Chatham, xxvii, 37.
- Rectifications of Error in, H. C. Thiselton, xxxi, 37.
- AGE AT ENTRY**, In a Mortality Table, T. B. Sprague, xxxi, 208.
- On different Methods of estimating, T. G. Ackland, xxxiii, 132.
- (Average), In various Companies, J. Chatham, xxix, 138.
- AGE AT VALUATION (Average)**, for Group Methods of Valuations. *See* Valuation of Life Policies (1).
- AGENCY**, Legal points in connection with, A. R. Barrand, xxxiii, 228.
- AGES**, Uncertainty of, as returned at the Indian Census, G. F. Hardy, xxv, 218.
- AIDS TO CALCULATION**. *See* Arithmometer, Hollerith Electrical Tabulating Machine, Mechanical Aids, and Mechanical Appliances.
- ALCOHOL**. The possible association of its consumption with excessive Mortality from Cancer, Dr. A. Newsholme, xxxviii, 347.
- "ALGEBRA: An elementary Text-Book"** (G. Chrystal). *Review* by T. E. Young, xxvi, 223.
- ALLEN (J. M.)**. On the generalisation of Simpson's Rule for Joint-Life Annuities, xxxiii, 535.
- ALLIN (S. J. H. W.)**. Social Conditions as affecting Widows' and Orphans' Pension Funds, xxxix, 337. Additional note, xxxix, 367.
- ALTENBURGER (J.)**. On the Grouping of Endowment Assurances for Valuation, xxxiv, 150, xxxv, 332. References, R. Todhunter, xxxv, 18; G. J. Lidstone, xxxv, 32; Author, xxxix, 335.
- On the Valuation of Policies in Groups, xxxix, 335.
- AMALGAMATION OF LIFE OFFICES**, S. Younger, vii, 183; C. Jellicoe, vii, 254; T. B. Sprague, vii, 355, xxv, 71; R. Tucker, x, 317; G. King, xxix, 520; A. Hendriks, xxx, 282; W. O. Nash, xxxv, 52.
- See also* Transfer.
- AMERICA (Actuarial Society of)**. *See* Actuarial Society of America.
- AMERICAN LIFE INSURANCE**.
- Official Returns relating to the business of American Life Insurance Companies in New York (1889), xxiii, 60.
- A New Departure in (adapted from "Spectator" of New York), xxiii, 436.
- Dividends ("Spectator" of New York), xxiv, 52.
- Systems of, G. H. Ryan, xxxii, 45.
- AMERICAN MORTALITY**, Law of, W. S. Nichols, xix, 28. *See also* S. Brown, viii, 184.
- AMERICAN MORTALITY TABLES**, On, C. F. Mc'ay, xvi, 20.
- AMERICAN OFFICES' (THIRTY) EXPERIENCE**. *See* Thirty American Offices.
- AMERICAN VALUATION TABLES**, W. A. Hutcheson, xxxvii, 91.
- AMICABLE (Scottish)**. *See* Scottish Amicable.
- AMICABLE SOCIETY**, Mortality Experience of (T. Galloway). References, S. Brown, ii, 202; C. Jellicoe, iv, 201; G. H. Ryan, xxvi, 256, 259; J. Chatham, xxix, 94, 117; W. J. H. Whittall, xxxi, 168.
- ANALYSED MORTALITY TABLES**. *See* Select Mortality Tables.
- ANDRAS (H. W.)**. On the System of Bonus distribution to Policy-holders as a percentage per annum for the Valuation period on the sum assured and existing Bonuses, considered in relation to some recent influences in Life Assurance Finance, xxxii, 320. Reference, J. Buchanan, xxxix, 258.
- "ANNALS, ANECDOTES, AND LEGENDS."** (J. Francis.) *Review*, iv, 75.
- ANNUITANTS**, Rate of Mortality among, S. C. Thomson, xxi, 190.
- A. J. Finlaison's Observations on the Rate of Mortality among Female Government Annuity-holders, T. B. Sprague, xxvi, 77.
- A. J. Finlaison's Female Government Annuity-holders' Table, 1884, Employment of, for Counter-Life in Survivorship Assurance, A. W. Sunderland, xxvii, 82; H. E. Nightingale, xxx, 27.

ANNUITANTS—*continued*.

- J. Finlaison's Male Annuitants' Table, W. M. Makeham, xxviii, 187.
- The Rate of Mortality amongst the Female Nominees of the General Annuity Trust Fund, G. King, xxxiii, 262.
- British Offices Experience, 1863-1893. *Review* by A. Levine, xxxv, 147.
- British Offices' Life Tables, 1893. An Account of the Principles and Methods adopted in the Compilation of the Data, the Graduation of the Experience, and the Construction of Deduced Tables. *Review* by R. Todhunter, xxxviii, 356.

ANNUITANTS IN FRANCE, Mortality Experience of Assured Lives and, G. F. Hardy, xxxiii, 485.**ANNUITIES (Life).**

- Early Methods of Computation, F. Hendriks, i, 2; J. Nicoll, xxxiv, 159.
- Deferred Annuity-Extract from a measure on this subject passed in Belgium (1819), i, 72.
- On Select Lives, J. A. Higham, i, 199, xx, 7; G. W. Berridge, xix, 351; T. B. Sprague, xx, 104, xxii, 404; G. King, xx, 236.
- Payable by Instalments. Half-yearly, quarterly, or at other equal intervals, E. J. Farren, i, 92*, 355; H. Ivory, iv, 291; Dr. T. Young, vii, 22; T. Carr, vii, 109, xviii, 247; A. De Morgan, xii, 206; T. B. Sprague, xiii, 188, 201, 305; W. S. B. Woolhouse, xv, 96; H. Hoskins, xix, 143; P. Sutton, xx, 115.
- Taxation of, P. Hardy, iii, 195.
- Method of obtaining the value at one rate of interest from the value at another given rate, J. Meikle, iii, 325.
- On the demonstration of formulae connected with, A. De Morgan, iv, 277.
- A. De Morgan's definition of an annuity, iv, 277, x, 302.
- On the calculation of, Sir J. W. Lubbock, v, 197.
- On the comparison of, Sir J. W. Lubbock, v, 277.
- Forborn and improved at interest, during the existence of a given Life, P. Hardy, vii, 1; H. A. Smith, xiv, 158; R. P. Hardy, xxiii, 244. Reference, G. King, xxiii, 249.
- Purchase of, to yield a certain rate of interest and replace the Capital at another rate, C. A. M. Willich, vii, 273.
- Barrett's Method of Calculating, A. De Morgan, x, 301.
- On a problem in, payable at equal intervals in each year, A. De Morgan, xii, 206.
- Single life annuity-values according to the Equitable Experience (Table A) and 3 per-cent interest, W. Morgan, xii, 237.
- Computation of by means of the Gamma Function, from Mortality Tables based on Gompertz's Law, E. McClintock, xviii, 242.
- Lubbock's formula for approximation to the value of, T. B. Sprague, xviii, 305.
- Market Value of, R. Wilding, xxii, 61.
- On the last r Survivors of m lives; General Expression for the Value of, G. King, xxii, 293.
- Value of, by Constant Factors, D. J. McG. McKenzie, xxiii, 187; J. Naylor, xxiii, 433.
- Manchester Corporation Water Works, A. J. Finlaison, xxiv, 374.
- Co-efficients for finding Values of, at any Rate of Interest, T. J. Searle, xxviii, 192.
- On Lives with Family History of Consumption, H. W. Manly, xxx, 117.
- Gain or Loss from Mortality in, G. H. Ryan, xxx, 189.
- Particulars of Contracts in force in British Life Offices, T. E. Young, xxx, 203.
- To Widows on the Death of their Husbands, G. King, xxx, 308.
- Liability of Life Insurance Company to pay Income Tax upon (Editorial), xxx, 318.
- Income Tax on, T. G. Ackland, xxxi, 81; A. Fraser, xxxiv, 102; J. E. Faulks, xxxviii, 302.
- On the relation between Temporary Life Annuities and Annuities Certain, G. F. Hardy, xxxiv, 85.
- and **ASSURANCES**. General Method of Approximation to their values for long terms of years on one or two lives, S. Brown, i, 20.

ANNUITIES (Life) and ASSURANCES—continued.

- — — Government. On the Rates and Regulations, M. N. Adler, xii, 265.
- — — W. Sutton's Lecture on the Theory of, xvi, 456.
- — — That depend on the Contingency of Marriage as well as Death, T. B. Sprague, xxi, 406. *See also Legal Decisions in re Blakenore, ex parte Blakenore*, xxiii, 124.
- — — On the approximate calculation of the values of increasing, G. J. Lidstone, xxxi, 68.
- — — On the Books and Forms to be used in Scheduling the particulars of the risks of a life assurance company under its contracts, for periodical or interim valuations, distribution of surplus, and for investigation of the rates of mortality, surrender, and lapse, J. Clatham, xxxii, 393.
- — — **(Certain)**, Value when bought to pay a certain rate during the whole term of its continuance, and to replace the capital at another rate, P. Hardy, i, 1*; A Subscriber, i, 101*; C. Jellicoe, i, 102*; C. A. M. Willich, vii, 273.
- — — Method of approximating to the Rate of Interest in, E. Ryley, i, 332; A. De Morgan, viii, 61; J. J. McLauchlan, xviii, 290; W. Sutton, xix, 77; G. F. Hardy, xxiii, 266; D. J. McG. McKenzie, xxiii, 405; S. W. Newling, xxxvii, 437; J. Spencer, xxxviii, 280.
- — — Demonstration of formulas for amount and present value, $\frac{(1+i)^n - 1}{i}$ and $\frac{1 - (1+i)^{-n}}{i}$, C. Jellicoe, v, 155.
- — — At simple Interest. Formula for an approximate value of, A. De Morgan, v, 256, xiii, 143; M. N. Adler, vii, 300.
- — — On the application of the Calculus of Finite Differences to, W. C. Otter, vii, 333, viii, 19.
- — — On their Component Parts, P. Gray, xi, 172.
- — — Theory of, W. M. Makeham, xiv, 189.
- — — On the analogy, Life Annuities and, G. King, xx, 435; G. H. Ryan, xxv, 443.
- — — Formulas for checking Tables of, G. King, xxiii, 186.
- — — Payable by instalments, D. J. McG. McKenzie, xxiii, 162.
- — — Value of, by constant factors, D. J. McG. McKenzie, xxiii, 162; J. Naylor, xxiii, 433.
- — — Income Tax on, A. Fraser, xxxiv, 102.
- — — Institute of Actuaries' Text-Book (Part 1). New Edition by R. Todhunter. *Review* by A. Levine, xxxvi, 385.
- — — **(Increasing or Decreasing)**. On the value when their successive payments are the figurate numbers, W. Orchard, i, 100*.
- — — On the amount of, A. De Morgan, iv, 243, 277.
- — — Formulas for the present value and amount of, E. H. Galsworthy, v, 53; C. G. Shaw, v, 152; P. Gray, vi, 190, xiv, 93; W. M. Makeham, xiv, 190.
- — — **(Permanent or Terminable)**. "W. S." on the proper mode of estimating the value as an investment, i, 93*.
- — — **(Complete)**, J. B. Cherriman, xxi, 299; G. King, xxiv, 418.
- — — On the value of, T. B. Sprague, xiii, 358, xiv, 36, xv, 244; W. S. B. Woolhouse, xv, 108.
- — — Market Value of, A. Baden, xvii, 447; T. Carr, xviii, 224, 247; J. Sorley, xx, 454.
- — — Payable by Instalments, T. Carr, xviii, 247; H. Hoskins, xix, 143.
- — — On the formulae for, H. N. Sheppard, xxxii, 458.
- — — **(Compound Survivorship)**, On the application of Makeham's Law to the practical calculation of the values of, F. E. Colenso, xxxi, 346.
- — — On the approximate evaluation of the integral for $a_{\overline{y}|x}$, R. Todhunter, xxxiii, 311; G. F. Hardy, xxxiv, 93.
- — — **(Continuous)**. *See Continuous Method*.
- — — **(Deferred)**, payable half-yearly or quarterly, H. Ivory, iv, 293.
- — — On the tables published by the National Debt Office, J. W. Stephenson, x, 44, xii, 178, 302, xiii, 114.
- — — Valuation of Option of Withdrawal in, W. B. Paterson, xxvi, 465.
- — — On the Calculation of, H. T. Adlard, xxxvi, 389.

- ANNUITIES (Family).** G. King, xxx, 291.
 ——— **(Increasing).** G. F. Hardy, xxiii, 280.
 ——— On the Approximate Calculation of the Values of, G. J. Lidstone, xxxi, 68.
 ——— **(Joint Life).** On the approximate value of, on three lives, P. Hardy, iii, 330.
 ——— For joint lives of A and B and t years after death of B, provided A lives so long, W. C. Otter, vii, 239.
 ——— On Simpson's rule for finding the value of, on three lives, A. de Morgan, viii, 181, x, 27.
 ——— Computation of, J. Henry, xiv, 212.
 ——— Involving three lives, G. F. Hardy, xxiii, 274.
 ——— On, H. W. Curjel, xxxvii, 353.
 ——— **(Last Survivor).** On a method suggested by W. Godward for finding the value of, on three lives, T. B. Sprague, xvii, 266; E. Smyth, xvii, 379.
 ——— On the general expression for the value of, on the last r survivors of m lives, G. King, xxii, 293.
 ——— **(Multiple).** Formation of Values and Amounts of, P. Gray, xxiv, 129.
 ——— **(Reversionary).** by Annual Premiums Returnable, P. Gray, xxi, 67.
 ——— Four formulas for the Valuation of an Annuity on a Compound Status, G. King, xxii, 296.
 ——— Value of an Annuity to y after x without issue, T. B. Sprague, xxiv, 329.
 ——— Value of the Option of Second Nomination in, G. F. Hardy, xxv, 134.
 ——— Alternative formulas for calculation of, where the Life Tenant and Reversioner are subject to different Rates of Mortality, G. King, xxvi, 284. Reference, T. G. Ackland, xxvi, 293.
 ——— **(Survivorship).** Their value when payable by instalments, H. Ivory, iv, 299.
 ——— Value of Annuity payable to y after death of x , provided x die within n years, R. Tucker, v, 255; H. A. Smith, v, 352.
 ——— Value of Annuity payable for the joint lives of x and y and for n years afterwards, if x lives so long, W. C. Otter, vii, 239.
 ——— On calculation of, by the Columnar Method, J. Meikle, xi, 40.
 ——— Value of Annuity to y after the death of x , if x die within n years, but to commence in n years if either be then alive, and to continue for the life of the Survivor, P. Gray, xiii, 60.
 ——— To pay 5 per-cent beside the Premium charged for Assurances by the Northampton Table and 3 per-cent interest, G. Davies, xv, 141.
See also Approximation, Summation, and Original Tables (2).
ANNUITY CONTRACTS. Mortality Tables employed in the valuation of (*Notice of Publication*), G. H. Ryan, xxv, 368.
ANNUITY (Due). Remarks on the phrase, A. De Morgan, x, 301; J. Chisholm, xiv, 205; T. B. Sprague, xviii, 406.
ANNUITY TABLES. On a Method of Checking, by help of one another, A. De Morgan, ii, 390.
 ——— On the Construction of, W. M. Makeham, viii, 301, xii, 305, xiii, 325. References, P. Gray, xi, 236; W. S. B. Woolhouse, xv, 399; W. Lazarus, xviii, 217; W. Sutton, xx, 174.
 ——— The Actuarial Certification of, under the "Friendly Societies' Act, 1875", W. Sutton, xxvi, 225; J. Nicoll, xxxiv, 165, 175, 177.
 ——— British Offices, 1893. *Review* (Editorial), xxxvii, 541.
ANSELL (C.). Reference to his Sickness Tables, H. Tomkins, iii, 10, v, 9; S. Brown, xi, 143.
ANSELL (C., Jr.). References to his Statistics of Families in the Upper and Professional Classes, C. Walford, xix, 201; T. B. Sprague, xxii, 118, xxv, 163; A. F. Burridge, xxiii, 318; J. Chatham, xxvii, 37; W. J. H. Whittall, xxxi, 162; H. Westergaard, xxxi, 380.
 ——— Formula of Graduation, T. B. Sprague, xxvi, 80.
ANTI-LOGARITHMS. *See* Logarithms.
APPORTIONABLE ANNUITIES. *See* Annuities (Complete).
APPORTIONMENT Problems in. On the Division of the Proceeds of the Sale of an Estate between Four Successive Life Tenants, T. B. Sprague, xviii, 69.

APPORTIONMENT OF A FUND between the Life Tenant and the Reversioner, C. Jellicoe, vi, 61; H. Wilbraham, vi, 211; A. Baden, xvi, 269; H. W. Porter, xvi, 284; E. Smyth, xvi, 386; T. B. Sprague, xviii, 77, xxiii, 82.

APPROXIMATE SOLUTION of Compound Interest Problems without the aid of Tables, M. N. Adler, xxiii, 359.

APPROXIMATE SUMMATION. See **Summation (Approximate)**.

APPROXIMATE VALUATION of Assurance Contracts, W. S. B. Woolhouse, xxvii, 433; J. Chisholm, xxvii, 442.

APPROXIMATION, To values of Annuities and Assurances for long terms on one or two lives, S. Brown, i, 20.

— To value of ρ in $a = \frac{1 - \rho^n - 1}{\rho}$, E. Ryley, i, 332.

— To value of Annuity-Certain at Simple Interest, A. De Morgan, v, 256, xiii, 443; M. N. Adler, vii, 300.

— To the rate of interest in an Annuity

a Life Annuity, J. Meikle, iv, 131, v, 152.

b Annuity-Certain, C. W. Merrifield, iii, 321; A. De Morgan, viii, 61; J. J. McLauchlan, xviii, 290; W. Sutton, xix, 77; G. F. Hardy, xxiii, 266; D. J. McG. McKenzie, xxiii, 495; S. W. Newling, xxxvii, 437; J. Spencer, xxxviii, 280.

— To the rate of interest yielded by a bond for 1 bearing interest at i per annum for n years and purchased for $1 - p$, "M", vi, 54. Reference, W. Sutton, xix, 80.

— On the Approximate Calculation of the Values of Increasing Annuities and Assurances. G. J. Lidstone, xxxi, 68.

— On a method of Approximately Calculating Net Premiums for Endowment Assurances on two joint lives. G. J. Lidstone, xxxiii, 354. References, J. E. Faulks, xxxix, 231; Author, xxxix, 236, 247.

— To the rate of interest yielded by a bond bought at a premium, R. Todhunter, xxxiii, 356.

ARCHER (W. H.). Return showing the population of Victoria on 31 December 1858, viii, 344.

ARGOBAST'S METHOD OF DEVELOPMENT, On, A. De Morgan, xii, 206.

ARITHMOMETER. J. C. Hamynghton, xii, 181, xvi, 241; Dr. Zillner, xv, 25; E. Sang, xvi, 258; W. J. Hancock, xvi, 265; P. Gray, xvii, 249, xviii, 20, 123; G. King, xx, 258.

— Its application to Woolhouse's Method of Graduation, G. King, xxi, 51.

— Its application to the Construction of Tables of Values of Endowment Assurance Policies, D. Carment, xxii, 368; A. D. Besant, xxxi, 366.

ARLIDGE (Dr. J. F.). On C. Walford's Paper "On the Position of Life and other Assurance Associations in relation to their Local Medical Examiners," xxii, 180.

ARMY AND NAVY (British). Mortality among Officers and Crews of H.M. Ships on Coast of Africa, i, 83.

— On the Mortality in, as shown by the Official Reports, J. J. McLauchlan, xxxiv, 251.

ARMY FORCES (Imperial). Mortality Experienced during the War in South Africa, 1899-1902, F. Schooling and E. A. Rusher, xxxvii, 545.

ASSESSMENT COMPANIES, Report on Standard Rates for, L. G. Fouse, xxvi, 208.

ASSESSMENT OF LIFE RISKS, J. Chisholm, xxv, 408.

ASSESSMENT SCHEMES (American), A. Day, xxvi, 176; H. W. Mauly, xxvi, 182; W. Sutton, xxviii, 417; A. Hendriks, xxx, 283.

— System in Canada, A. W. Tarn, xxxiv, 535.

See also **Tontine and Mutual Assessment Schemes**.

ASSET. On the derivation and use of the word. T. B. Sprague, xxv, 366.

ASSETS OF LIFE OFFICES in the Colonies, A. W. Tarn, xxxiv, 529.

ASSIGNMENT OF LIFE POLICIES. See **R. Teece**, xxv, 360; **C. D. Higham**, xxvi, 325, xxxv, 411; **W. K. Lemon**, xxix, 385; **A. H. Bailey**, xxix, 409; **T. B. Sprague**, xxix, 414, xxxiii, 382, 384; **B. Newbatt**, xxix, 416; **A. R. Barrand**, xxxiii, 207, 226.

— On the proper stamps, C. J. Bunyon, i, 71*.

— Act of 1867, xiv, 46.

ASSIGNMENT OF LIFE POLICIES *continued.*

- In the Colonies and the United States. (Editorial), xxvii, 420.
- On the Legal Position of a Purchaser (for Value) from the Assignee under a Voluntary Settlement, in the event of the subsequent Bankruptcy of the Settlor, G. J. Lidstone, xxxv, 371.

ASSOCIATED SCOTTISH LIFE OFFICES. *See Scottish Life Offices.***ASSURANCE.** Collective Assurance, R. P. Hardy, xxx, 79.

- Various Forms of, and Modes of Payment of Premiums, B. Newbatt, xxxi, 9.
- Some Observations on Insurance Matters in Canada and the United States, G. H. Ryan, xxxii, 39.
- The Theory of Evolution applied to the system of Life Assurance and, incidentally, to Insurance generally, T. E. Young, xxxii, 247.
- (Compound Survivorship), V. M. Makeham, x, 244, xii, 61; F. E. Colenso, xxxi, 346. *See also Survivorship Assurances.*

ASSURANCE (Systems of). *See F. G. P. Neison, Sr., i, 368.***ASSURANCE COMPANIES.** *See Life Assurance Companies.***"ASSURANCE MAGAZINE."** Note regarding, M. Dubroca, i, 77*. *See also Journal of the Institute.***"ASSURANCE AND ANNUITY TABLES"** (P. Gray, H. A. Smith and W. Orchard). *Review*, ii, 194.**"ASSURANCE" OR "INSURANCE"?** F. Hendriks, ii, 150; T. B. Sprague, xvi, 77; Dr. W. Farr, xix, 434.**"ASSURANCE RISKS OF WARFARE"** (T. G. Ackland and A. H. Snice). *Review* by H. J. Rothery, xxviii, 463.**ASSURANCES (Compound Survivorship).** F. E. Colenso, xxxi, 346.

- (Contingent). *See Survivorship Assurances.*
 - (Continuous). *See Continuous Method.*
 - (Deferred). *See Deferred Assurances.*
 - (Endowment). *See Endowment Assurances.*
 - (Increasing). On the Approximate Calculation of the Values of, G. J. Lidstone, xxxi, 68.
 - Payable at the Instant of Death. *See Instant of Death.*
 - (Sinking Fund). *See Sinking Fund Assurances.*
 - (Survivorship). On x against y and t years longer, J. Chatham, xxv, 439.
 - — A. W. Sinderland, xxvi, 58. *See also Survivorship Assurances.*
 - (Temporary). *See Temporary Assurances.*
 - With return of Premiums, G. J. Lidstone, xxviii, 250.
- ASSURED LIVES.** British Offices Life Tables, 1893. An Account of the Principles and Methods adopted in the compilation of the data, the graduation of the experience and the construction of deduced tables. *Review* by R. Todhunter, xxxviii, 356.
- British Offices Experience, 1863-1893. *See Mortality.*
 - Mortality among. *See Mortality.*

ASYLUMS IN SCOTLAND, Death Rate in, Sir A. Mitchell, xxviii, 432.**"ATHENÆUM",** Extracts from:—

- On Errata in E. Sang's Seven-figure Logarithms, xvii, 298.
- Respecting the Foundation of the Institute, xxx, 314.

ATKINS (Richard). Stamp Duties on Contracts of Life Assurance, iv, 22.**AUSTRALASIA.** Tasmanian Life Assurance Companies Act, 1873, xx, 441.

- Annual Death Rate for the years 1871-79, A. F. Burrbridge, xxiii, 314.
 - Reference to Laws relating to Assignment of Life Policies, C. D. Higham, xxvi, 327.
 - Summary of Revenue Accounts (for 1886) of Twelve Australasian Companies, xxvi, 476.
 - Life Assurance Business in, D. Carment, xxx, 219.
 - The Work and Development of Life Assurance Companies in, A. W. Tarn, xxxiv, 522.
 - Life Assurance Legislation in, A. W. Tarn, xxxiv, 545.
 - List of Native Life Offices transacting business in, 1897, A. W. Tarn, xxxiv, 554.
- AUSTRALIA.** Victorian Life Assurance Companies Act, 1873, xx, 59.
- Victoria, Annual Death Rate, 1871-79, A. F. Burrbridge, xxiii, 314.
 - Rates of Mortality in, A. F. Burrbridge, xxiv, 333.

AUSTRALIA - *continued*.

- Population Tables (Victoria, New South Wales, Queensland, South Australia, Western Australia), A. F. BurrIDGE, xxiv, 335.
- Settlement Policies in the Colonies, R. Teece, xxv, 361.
- South Australian Life Assurance Companies' Act, 1882, xxvi, 24.
- Western Australian Life Assurance Companies Act, 1889, xxix, 32.
- On the Rates of Mortality in New South Wales and Victoria, E. M. Moors and W. R. Day, xxxvi, 151.

AUSTRALIAN MUTUAL PROVIDENT SOCIETY, Extracts from T. B. Sprague's opinion on Questions submitted by the, xix, 170.

- Appendices to the Opinion of Messrs. Hendriks, Bailey, and R. P. Hardy, upon the case submitted to them on behalf of the Society, xxxi, 325.
- Mortality Experience of the. Reference, A. W. Tarn, xxxiv, 542.
- Mortality from Cancer, xxxvi, 103.

AUSTRIA. See *Foreign Intelligence*.

AUXILIARY TABLES for the Computation of Life Contingencies. On the early history of, F. Hendriks, i, 1, i, 12*.

AVERAGE. A definite integral between the limits 0 and 1, necessarily represents an average value, E. J. Farren, i, 92*, 355; S. Younger, vii, 71.

AVERAGE AMOUNT of a sum invested at compound interest for Life of the Investor. On the, H. A. Smith, xiv, 158.

AVERAGE CALCULATIONS, On the stability of results based upon, considered with reference to the number of transactions embraced, R. Campbell, ix, 216.

AVERAGE LIFE OFFICE, On the Determination of an, H. W. Manly, xiv, 291; W. Sutton, xx, 193; G. King, xx, 246, 300; W. T. Gray, xx, 314. See also *Model Office*.

AVERAGE PREMIUM, On an, C. J. Harvey, xxiv, 296.

AVERAGE RATE OF INTEREST, C. D. Higham, xxxv, 439. See also **A. G. Mackenzie**, xxix, 190.

BABBAGE (C.). Letter as to his remarks on the Equitable Society, F. Baily, x, 309. Reply, W. Morgan, x, 311.

— Quoted by H. W. Porter, iv, 108; Sir J. W. Lubbock, ix, 141; C. Jellicoe, x, 333; W. Sutton, xvi, 444.

BABINGTON (Dr. B. G.). On the Epidemiological Society, i, 240. Extract from Address to that Society (1850), ii, 56.

BACHELORS, HUSBANDS AND WIDOWERS in England and Wales, G. King, xxx, 293.

BACON (J.). "Spurious Selection", xl, 304.

BACON (J.) and ACKLAND (T. G.). On the Valuation of Whole-Life Industrial Assurances with allowance for Lapses, xxxviii, 539. Reference, G. J. Lidstone, xxxix, 231-5.

BADEN (A.). On the Equitable Apportionment of a Fund between the Life Tenant and the Reversioner, xvi, 269, 281. Reference, T. B. Sprague, xviii, 77.

— On the formula for the market value of a Complete Annuity, xvii, 447. Reference, T. Carr, xviii, 224.

— Remarks on A. H. Bailey's paper (xxi, 115) "On the Pure Premium Method of Valuation" extracted from the *Insurance Record*, xxii, 50.

BAILEY (A. H.). On the Question of Interest in Policies upon the Life of Another, iv, 368, v, 168. Remarks (Editorial), v, 170.

— On an Approximate Expression for the Value of an Assurance, Life against Life, ix, 299.

— On A. G. Finlaison's Report and the English Life Table, ix, 357. Reference, H. W. Porter, x, 31.

— On the Principles on which the Funds of Life Assurance Societies should be invested, x, 142. References, J. Coles, xv, 1; J. Burn, xxxiv, 475.

— Estimates of the Liabilities of Life Assurance Companies, xi, 111. Reference, T. B. Sprague, xii, 113; Mr. Bailey's Reply, xii, 181.

— Extra Premiums for Foreign Residence, xiv, 104.

— Form of Policy of Assurance, embodying his new conditions of Foreign Residence, xiv, 105.

— On the Rate of Mortality at the period of Early Manhood, xiv, 247. Reference, W. Sutton, xvi, 150.

BAILEY (A. H.) *continued.*

- On the Rates of Extra Premium for Foreign Travelling and Residence, xv, 77.
- On Insolvency in Life Assurance Companies, xvi, 389. Reference, G. H. Ryan, xxxii, 27.
- The Expenses of Life Assurance Companies: How they affect the Assured, xix, 1.
- Remarks on T. H. Cooke's Indian Uncovenanted Service Life Tables, xix, 221.
- The pure Premium Method of Valuation, xxi, 115. Remarks by T. B. Sprague, xxi, 135. Extracts from Correspondence in the *Insurance Record*, xxii, 43. References, R. Teece, xxii, 251; S. G. Warner, xxxvii, 57, 70.
- Presidential Addresses (29 November 1880), xxii, 381. Reference, B. Newbatt, xxix, 7. (28 November 1881), xxiii, 157.
- On the Income Tax, especially in Reference to its Incidence on Assurance Companies, xxv, 314. Reference, B. Newbatt, xxviii, 280.
- Vaccination, and the Mortality from Small-pox in London, xxxvii, 312.

BAILEY (A. H.) and DAY (A.). On the Rate of Mortality prevailing among the Peerage Families during the Nineteenth Century, ix, 305. References, G. W. Berridge, xii, 220; W. M. Makeham, xiii, 340; C. Walford, xix, 191.

BAILEY (A. H.), HENDRIKS (A.) and HARDY (R. P.). Appendices to their Opinion upon the Case submitted to them on behalf of the Australian Mutual Provident Society, dated 11 September 1893, xxxi, 325.

BAILY (FRANCIS). Memoir on Barrett's Formule (History of Commutation Tables), F. Hendriks, i, 1.

- Account of a Correspondence between him and George Barrett, A. De Morgan, iv, 185.
- Letter from A. De Morgan, and Resolutions of the Council of the Institute as to the Manuscripts of his Works, iv, 275.
- Letter Regarding C. Babbage's Publication as to the Equitable Society, x, 309. Reply by W. Morgan, x, 311.
- On his Demonstration of the Values of Annuities payable half-yearly, &c., T. B. Sprague, xiii, 190, 306.

BAKER (H. J.) and RAISIN (A. H.). British Offices Life Tables, 1893. Select Tables, Participating and Non-Participating Assurances. *Review* (Editorial), xxxix, 123.

“**BANKERS' MAGAZINE.**” Popular Aspects of Surrender-Values, G. H. Ryan. Reference, Author, xxxii, 26.

BANKING, System of, in Canada, G. H. Ryan, xxxii, 12.

BANKRUPTCY, On some Legal Points arising out of, in Life Assurance Practice, A. R. Barrand, xxxiii, 215.

— Assignee of Life Policy in, T. B. Sprague, xxxiii, 384.

— The Act of 1883. Reference, G. J. Lidstone, xxxv, 371.

— Of Voluntary Settlor. Legal Position of Purchaser (for Value) from the Assignee under a Voluntary Settlement, G. J. Lidstone, xxxv, 371.

See also Legislation.

BANKRUPT LIFE ASSURANCE COMPANIES. Valuation of Policies, xxiii, 306.

BANKS, On the clearing of, Sir J. W. Lubbock, ix, 141.

BARBADOS, Experience among Assured Lives in, G. F. Hardy and H. J. Rothery, xxvii, 161.

BARBADOS MUTUAL OFFICE, Mortality Experience of, G. F. Hardy and H. J. Rothery, xxvii, 163; W. J. H. Whittall, xxxi, 182.

— Work and Development of, A. W. Tarn, xxxiv, 519.

BARLOW (Thomas). Abridgment of his Memoir of the late Griffith Davies, Esq., F.R.S., v, 337.

BARNES (W.). Annual Reports of the Insurance Departments of the State of New York. *Review* of the Fifth, xii, 110; Ditto of the Eighth, xiv, 226.

— Notice of his Report on the Position and Prospects of the Life Association of America, xvi, 358.

- BARRAND (A. R.).** On some Legal Points arising in Life Assurance Practice, xxxiii, 205.
- **Debentures of Trading Companies as Investments for Life Assurance Funds, considered in their Legal and Financial Aspects,** xxxiv, 421. Reference, J. E. Faulks, xxxv, 154.
- **Reviews:**—
- — “On the Law of Real Property in England”, by G. Wood Hill, xxxiv, 392.
- — “The London Daily Stock and Share List”, by George Clare, xxxiv, 391.
- BARRETT (G.).** His Method of Calculating Annuities. See F. Hendriks, i, 1; A. De Morgan, iv, 199, x, 301, xii, 328; P. Gray, x, 81; T. B. Sprague, xx, 111.
- Account of a Correspondence between him and Francis Baily, A. De Morgan, iv, 185.
- On his Calculations in the early part of the Nineteenth Century, F. Schooling, xxxiii, 367.
- BARTLETT (W. H. G.).** Mortality Experience of Mutual Life Assurance Company of New York, 1843-73, J. Chatham, xxix, 119.
- BASE FEES.** The means of making advances on them, T. B. Sprague, xvii, 247, xviii, 85; C. J. Bunyon, xviii, 7, 12.
- On some Legal Incidents affecting their Duration in the hands of Purchasers, C. J. Bunyon, xviii, 100.
- A. W. Sunderland, xxvii, 90; A. F. BurrIDGE, xxx, 552.
- BAUMHAUER (M. von).** On the method of constructing Tables of Mortality from Census Returns. Extracted from the “Programme” of the 7th Session of the International Statistical Congress, held at the Hague in September 1869. Translated by J. Hill Williams, xvi, 34.
- BEECK (Dr. OTTO).** Description of his new Tables of Annuities, &c. (Experience Mortality $3\frac{1}{2}$ per-cent interest), W. Lazarus, xiii, 251.
- BEETON (Miss M.) and PEARSON (Karl).** Data for the Problem of Evolution in Man. A First Study of the Inheritance of Longevity and the Selective Death Rate in Man, xxxv, 112.
- BEETON (Miss M.), YULE (G. U.) and PEARSON (Karl).** Data for the Problem of Evolution in Man. V. On the Correlation between Duration of Life and the Number of Offspring, xxxv, 458.
- BEEVOR (Sir Hugh).** “The Declension of Phthisis.” Review by Dr. A. Newsholme, xxxiv, 584.
- BÉGAULT (A.).** On the Necessity for a Universal Notation. Report presented to the International Congress of Actuaries held at Brussels, September 1895. Translated by G. King, xxxiii, 1.
- BEGBIE (Dr. J. W.).** Notice of his Observations on the Mortality of the Scottish Widows’ Fund, from 1815 to 1845, i, 81*.
- Medical Statistics of Life Assurance Observations on the Causes of Death among the Assured of the Scottish Widows’ Fund and Life Assurance Company, from 1846 to 1852. Review, iv, 76. Reference, H. W. Porter, iv, 256. From 1853 to 1859. Reference, W. Spens, x, 81.
- BELGIUM.** See Foreign Intelligence.
- BELL (F.).** On the Retrospective Method of Valuation, xxxix, 17.
- BENEFIT OF SURVIVORSHIP** in Reversions. See Reversions.
- BENEFITS** that depend upon Death without Issue, T. B. Sprague, xxiv, 327.
- Payable fractionally through the year, G. King, xxiv, 418.
- Numerical Calculation of the Values of Complex, G. King, xxvi, 276.
- Depending on Marriage and Issue, T. B. Sprague, xxviii, 350.
- Formule for determining value of, for Collective Assurance, R. P. Hardy, xxx, 79.
- Granted by Clerks’ Associations, T. G. Ackland, xxxiii, 68, 164.
- BERGSÖE (M.).** Account of Government Statistics in Denmark, v, 25.
- BERNOULLI’S THEOREM.** W. S. B. Woolhouse, xxi, 66.
- BERRIDGE (G. W.).** On a Method of Graduation applied to the Peerage Mortality deduced by A. H. Bailey and A. Day, with Tables founded thereon, xii, 220. Reference, W. Sutton, xx, 172. Demonstration of the Interpolation Formula used herein, xiv, 244. Reference, T. Carr, xiv, 480.

BERRIDGE (G. W.)—*continued*.

— On the Condition and Progress of the German Life Assurance Offices in the year 1867 (being an article which appeared in No. 881 of the Bremen "Handelsblatt"), translated and abridged, xv, 55.

— On the values of Annuities on Assured Lives, xix, 351. Reference, G. King, xx, 245.

BESANT (A. D.). Tables of the Values of Endowment Assurance Policies, HM $2\frac{1}{2}$ per-cent, Constructed on the Arithmometer, xxxi, 366.

BESSO (Marco). Progress of Life Assurance throughout the World, from 1859 to 1883 (from "Le Moniteur des Assurances"), xxvi, 426.

BIDEN (W. D.). Formulae for approximating to the Expectation of Life, vii, 352.

— On the Valuation of Policies of Assurance, x, 252, 322.

BINOMIAL LAW. On its application to Statistical Enquiries, S. Brown, xvii, 310.

BIRMINGHAM INSURANCE INSTITUTE, Address delivered to. "The Theory of Evolution applied to the System of Life Assurance, and, incidentally, to Insurance generally", T. E. Young, xxxii, 247.

BIRTHS. On the Influence of Various Conditions upon the proportions of Male and Female Births, J. N. and Dr. C. J. Lewis, xl, 154.

BLACK (Morrice). On his suggestion as to the insurance of invalid lives, S. Younger, x, 268; Sir E. W. Brabrook, x, 349.

BLACK *v.* **THE ENGLISH WIDOWS' FUND**. Letter on the case from "One who was present at the trial", viii, 357.

BLACKLEY (Canon). Scheme for National Provident Insurance. References, A. Day, xxvi, 169; "Quarterly Review", xxviii, 131; R. P. Hardy, xxix, 367; Sir E. W. Brabrook, xxx, 237; J. Nicoll, xxxiv, 225.

BOARD OF TRADE. Names of Committee appointed to enquire as to the Operations of Companies (not being Life Assurance Companies) which collect periodical payments from the industrial classes in return for benefits promised in the future, xxxix, 336.

— Report of Committee appointed to enquire and report as to the Operations of Bond Investment Companies, xl, 99.

BOARD OF TRADE RETURNS. Rules with reference to the Life Assurance Companies Acts, 1871 and 1872, xvii, 198.

— Under the Life Assurance Companies' Act, 1870. Report by W. R. Malcolm and R. G. C. Hamilton, xviii, 390.

— Summaries of Accounts, Life Assurance and Annuities. 1883 and 1884, xxv, 271; 1885, xxvi, 153; 1886, xxvi, 321; 1887, xxviii, 239; 1888, xxviii, 243; 1889, xxviii, 477; 1890, xxix, 471; 1891, xxx, 157; 1892, xxxi, 156; 1893, xxxi, 333; 1894, xxxii, 122; 1895, xxxii, 461; 1896, xxxiii, 449; 1897, xxxiv, 154; 1898, xxxv, 54; 1899, xxxv, 337; 1900, xxxvi, 201; 1901, xxxvii, 313; 1902, xxxviii, 172; 1903, xxxviii, 535; 1904, xxxix, 330; 1905, xl, 313.

BOND INVESTMENT COMPANIES, Report of the Departmental Committee on, xl, 99.

BONUS AND BONUSES.

— On the Conditions which give rise to, and on the Amount of Return, or "Bonus," which such Conditions justify, C. Jellicoe, ii, 333.

— On the character of certain methods adopted for the Determination and Division of Surplus, C. Jellicoe, iii, 185.

— Division of Net Profits of a Mutual Life Assurance Company, H. Wilbraham, vi, 278.

— Application of, to convert ordinary Whole Term Assurances into Limited-Payment Policies or Endowment Assurances, T. B. Sprague, vi, 290, 311; T. Marr, xiii, 246; J. R. Macfadyen, xiv, 364; H. W. Manly, xxvii, 362, xxviii, 333; New Formula for, F. E. Colenso, xxvii, 409; H. P. Calderon, xxviii, 394.

— On certain methods of distributing Surplus, T. B. Sprague, vii, 61; H. W. Manly, xxiii, 233.

— S. Homans' plan for equitable distribution of, xi, 121. Reference (Editorial), xiv, 326, xv, 48.

— How earned and distributed, A. Hewat, xxii, 286.

BONUS AND BONUSES—*continued.*

- Arising from Surplus Premiums and Surplus Interests, A. W. Sunderland, xxvi, 357, xxviii, 257.
- Uniform Reversionary Bonuses equitable when difference of 1 per-cent between Valuation and actual rate of interest, G. King, xxvi, 381.
- On Endowment Assurance Policies, A. W. Sunderland, xxviii, 257; G. King, xxviii, 274.
- Distribution of, in relation to Office Premiums and Modes of Valuation, H. J. Rothery, xxx, 131; A. B. Adlard, xxx, 153.
- Reserves and Distribution of, B. Newbatt, xxxi, 16.
- Notes on the Use of Scales of Premiums reduced in anticipation of future, G. F. Hardy, xxxi, 261.
- (Cash) applied in reduction of Premiums, G. F. Hardy, xxxi, 262.
- Distribution of, to Policyholders as a percentage per annum for the Valuation period on the sum assured, or on the sum assured and existing Bonuses, H. W. Andras, xxxii, 320.
- Profit arising from Surplus Interest and Mortality Profit, compared, G. F. Hardy, xxxii, 368.
- Methods of Distribution of, in the Colonies, A. W. Tarn, xxxiv, 541.
- On the Rationale of Discounted-Bonus Premiums, H. Moir, xxxvi, 4.
- Probability of Maintenance, H. Moir, xxxvi, 12.
- As affected by the Improved Rate of Mortality evinced by the Combined Experience, 1863-1893, H. Moir, xxxvi, 16.
- Deficient Bonuses on Discounted-Bonus Policies, H. Moir, xxxvi, 35.
- A few Notes upon Certain Methods of allotting Surplus, T. E. Young, xxxvii, 46.
- American Methods of Distribution, W. A. Hutcheson, xxxvii, 99.
- The Retrospective Method of Valuation of, F. Bell, xxxix, 24.
- Their relations to Reserves in Model Office Valuations, J. Buchanan, xxxix, 257.

See also Surplus.

BONUS (Discounted), G. F. Hardy, xxxi, 263, 267; H. Moir, xxxvi, 4.

BONUS OPTIONS, H. W. Manly, xxvii, 380.

BONUS (OR INVESTIGATION) REPORTS.

- Atlas (1870), xvi, 58.
- Australian Mutual Provident (1869), xv, 365.
- Australian Widows' Life Assurance Society (1876), xxi, 71.
- Caledonian (1871), xvii, 369.
- Cape of Good Hope Mutual (1874), xx, 358.
- City of Glasgow (1869), xvi, 144; (1874), xix, 298.
- Clergy Mutual (1871), xviii, 143.
- Clerical, Medical and General (1866), xiv, 133; (1872), xviii, 273.
- Colonial Mutual (1879), xxiii, 366.
- Commercial Union (1868), xiv, 399.
- Crown (1865), xiv, 139; (1870), xvii, 71.
- Eagle (1867), xiv, 51; (1872), xviii, 285.
- Economic (1864), xiv, 237; (1869), xvi, 120.
- Edinburgh (1871), xvii, 280.
- English and Scottish Law (1866), xiv, 57; (1871), xvii, 127.
- Equity and Law (1865), xiv, 238; (1870), xvi, 130.
- Friends' Provident Institution (1868), xvi, 381.
- General Insurance Company of France, xix, 435.
- Great Britain (1874), xix, 135.
- Gresham (1867), xiv, 407; (1870), xvii, 65.
- Guardian (1865), xiv, 53; (1870), xvi, 64.
- Imperial (1871), xvii, 203.
- Law (1865), xiv, 50; (1870), xvi, 61.
- Law Union (1864), xv, 364; (1870), xvi, 68.
- Legal and General (1867), xiv, 136; (1872), xviii, 61.
- Liberal Annuity Company of Dublin (1874), xix, 122.
- Life Association of Scotland (1871), xviii, 366.
- London and Lancashire Life (1873), xviii, 281.

BONUS (OR INVESTIGATION) REPORTS *continued.*

- London and Provincial Law (1866), xv, 66; (1871), xvii, 134.
- London Assurance (1871), xvii, 436.
- London Life Association (1865), xiv, 131.
- Madras Equitable (1880), xxiii, 52.
- Mutual Assurance Society of Victoria (1876), xx, 369.
- National (1876), xx, 129.
- National (of France), xix, 439.
- National Mutual (of Australasia) (1874), xx, 43; (1880), xxiii, 454.
- New Zealand Government (1876), xx, 371; (1880), xxiii, 439.
- North British and Mercantile (1866), xv, 220; (1871), xvii, 214.
- Northern (1866), xiv, 55; (1871), xvii, 270.
- Norwich Union (1871), xvii, 265.
- Provident (1868), xvi, 127; (1873), xviii, 446.
- Rock (1861), xv, 69.
- Royal (1870), xvi, 135.
- Royal (of Belgium) (1869), xv, 378.
- Royal Exchange (1871), xviii, 442.
- Scottish Amicable (1868), xiv, 463.
- Scottish Commercial (1874), xix, 214.
- Scottish Equitable (1873), xviii, 356.
- Scottish National (1868), xvi, 377; (1872), xix, 217.
- Scottish Provident (1867), xv, 72.
- Scottish Provincial (1867), xv, 446; (1872), xix, 374; (1877), xx, 455.
- Scottish Widows' Fund (1867), xiv, 121; (1874), xviii, 431.
- Sovereign (1874), xviii, 452.
- Standard (1866), xiv, 235; (1871), xix, 56.
- Star (1869), xv, 383.
- Union (1868), xvi, 125; (1872), xvii, 375.
- Universal (1870), xvi, 56.
- University (1870), xvi, 51.
- Westminster and General (1867), xv, 218; (1872), xvii, 286.

BONUS POLICIES in the British Empire Mutual Assurance Society. On the Mortality observed among the various classes of, G. F. Hardy, xxiii, 1.

BOOK-KEEPING, Remarks and quotations from C. Jellicoe's notes of a lecture on, H. W. Porter, ii, 199.

— Life Assurance Premiums, J. Chatham, xxxviii, 619.

— (Actuarial), T. J. Searle, xxx, 493; J. A. Robertson, xxx, 533; J. Chatham, xxxii, 393; W. R. Dovey, xxxiv, 348.

BOOKS AND FORMS to be used in Scheduling the Particulars of the Risks of a Life Assurance Company under its Assurance and Annuity Contracts for Periodical or Interim Valuations, Distribution of Surplus, and for Investigation of the Rates of Mortality, Surrender, and Lapse, J. Chatham, xxxii, 393.

BOOLE'S "FINITE DIFFERENCES", An error in Factorial Notation in, R. Wilding, xxii, 60. Reference, G. F. Hardy, xxiv, 98.

BOOTH (C.), Scheme for National Provident Insurance, R. P. Hardy, xxx, 87; T. E. Young, xxx, 88; A. H. Bailey, xxx, 93; M. N. Adler, xxx, 94; Sir E. W. Brabrook, xxx, 237. *See also* Blackley (Canon).

BOWLEY (A. L.), "Elements of Statistics." *Review* by J. Holliday, xxxvi, 197.

BOWSER (W. A.), On a Table of Mortality (IMF⁽³⁾) deduced from the New Experience (Institute) Observations, xvi, 146.

— On the Rate of Mortality in Infancy and Childhood, xvii, 26. Reference, J. N. and Dr. C. J. Lewis, xl, 164.

— Notes on the Observations of the Rev. John Hodgson on the Mortality of the Clergy of England and Wales, with remarks on the Tables deduced therefrom by S. Brown, xvii, 328. Letter from S. Brown on the subject of this paper, xvii, 339.

— Friendly Societies' Valuation and other Tables. *Review* by G. F. Hardy, xxxiii, 268.

- BRABROOK (Sir E. W.).** On S. Younger's Plan for the Assurance of Invalid Lives, x, 349. Mr. Younger's reply, xi, 49.
- Provision for Old Age (extract from Report of Friendly Societies, 1891), xxx, 235.
- BRAID (W.).** Letter communicating tables of single and annual premiums for Joint Life Assurances, Carlisle 3 per-cent, v, 350.
- Letter communicating original tables on the Carlisle 3 per-cent basis, namely D and N columns and annuity values for 3 joint lives, the differences of age being 1, 1, 2 years; 1, 2, 3 years; 2, 2, 4 years; 2, 3, 5 years; 2, 4, 6 years; also annuities on the last survivor of 3 lives, the differences of age being 2, 2, 4 years and 2, 4, 6 years, vi, 109.
- BREMIKER (Dr. C.).** On the risk attaching to the Grant of Life Assurances. Translated by T. B. Sprague, xvi, 216, 285.
- BRESLAU, Dr. E. Halley's** "Estimate of the Degrees of the Mortality of Mankind drawn from curious Tables of the Births and Funerals at the City of", xviii, 251. "Some further Considerations on the Breslau Bills of Mortality. By the same Hand with the former", xviii, 262. See also **E. J. Farren**, i, 43.
- BRIDGES (W.).** "Prudent Man's Almanac for 1852; with Essays and Illustrations of every Branch of Assurance—Life, Fire, Marine, Freehold, Accident, Guarantee; with Practical Suggestions for the Extension of the Principle of Average to Sundry National and Social Purposes." *Review*, iii, 183.
- BRIGGS (H.).** Method of Interpolation. See *Interpolation* (Briggs's Method).
- BRISTOWE (Dr. J. S.).** A Brief Statement of the Modern Views of the Cause, Nature and Prevention of Pulmonary Consumption, and of Tuberculosis (or Scrofula), xxvi, 220. Reference, F. Eve, xxvii, 156.
- BRITISH ARMY AND NAVY,** On the Mortality in, as shown by the Official Reports, J. J. McLauchlan, xxxiv, 251.
- BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.** Extracts from the Opening Address of the President (S. Brown) of Section F (Economic Science and Statistics) at the 35th Meeting, Norwich, 1868, xv, 18.
- Meeting, 1871. Extract from Lord Neave's Opening Address, xvii, 63.
- Report of Committee on Mathematical Notation and Printing, xx, 355.
- BRITISH EMPIRE MUTUAL LIFE OFFICE,** Mortality among Bonus Policies, G. F. Hardy, xxiii, 1.
- Mortality from Cancer, G. King and Dr. A. Newsholme, xxxvi, 124.
- "**BRITISH MEDICAL JOURNAL**" (Reprinted from). The Possible Association of the Consumption of Alcohol with Excessive Mortality from Cancer, Dr. A. Newsholme, xxxviii, 347.
- BRITISH OFFICES' EXPERIENCE, 1863-1893.** References, W. J. H. Whittall, xxxi, 194; H. W. Manly, xxxv, 100, 101; C. D. Higham, xxxv, 437; G. King, xxxvii, 455.
- The Treatment of the Discontinuances in, G. H. Ryan, xxxi, 309, 313; J. Chatham, xxxi, 310, 312; T. B. Sprague, xxxi, 311.
- Annuity-takers. *Review* by A. Levine, xxxv, 147.
- Assured Lives. *Review* by A. Levine, xxxv, 484.
- Report of the Publication of the Volumes of Unadjusted Data (Whole-Life Assurances, Males and Females), xxxvi, 310.
- Statement and Comparisons, R. P. Hardy, xxxvi, 315.
- An Investigation of the Rates of Mortality in different Classes of the Assurance Experience, and of the Resulting Net Premiums and Policy Reserves, T. G. Ackland, xxxvii, 113.
- Endowment Assurances, xxxvii, 119, 128, 138; other Classes, xxxvii, 127.
- Temporary Assurances, xxxvii, 123, 129; Policy Reserves, xxxvii, 131.
- Comparison of Full and Truncated Aggregate Tables with those of the H^M and $H^{M(5)}$ Experience, 1863, R. P. Hardy, xxxvii, 147.
- Select Mortality Tables. Rates of Mortality, and Net Annual Premiums and Policy Values at 3 per-cent, G. F. Hardy, xxxvii, 175-176.
- Temporary Assurances. Graduation of Exposed to Risk and Deaths by means of Frequency Curves, W. P. Elderton, xxxvii, 509.
- Premiums and Annuities based thereon at 3 per-cent interest, W. P. Elderton, xxxvii, 513.

BRITISH OFFICES' EXPERIENCE, 1863-1893—*continued.*

- Ammitants. Graduation of the Experience by the Graphic Method, J. Chatham, xxxvii, 526.
- "An Account of the Principles and Methods adopted in the compilation of the Data, the graduation of the Experience, and the construction of deduced Tables." *Review* by R. Todhunter, xxxviii, 356.
- Memorandum on the Graduation of the Whole-Life without Profit Mortality Table—Male Lives, G. F. Hardy, xxxviii, 501.
- Whole-Life Assurances, without Participation in Profits—Male Lives. Adjusted Data, G. F. Hardy, xxxviii, 512.

BRITISH OFFICES' LIFE TABLES, 1893.

- Aggregate Tables, OM and OM^{50} . *Review* (Editorial), xxxvii, 439.
- Annuities. *Review* (Editorial), xxxvii, 511.
- Official Symbols adopted by the Joint Committee, xxxviii, 97.
- Select Tables OM . *Review* (Editorial), xxxviii, 287.
- Select Tables, Participating and Non-Participating Assurances (H. J. Baker and A. H. Raisin). *Review* (Editorial), xxxix, 123.
- Graduation of, Reference to OM Table, W. P. Elderton, xl, 224.
- Errata in, xxxviii, 98.
- On the application of the Select Tables to the Valuation of Whole-Life Policies, G. King, xl, 1; O. F. Diver, xl, 15; T. G. Ackland, xl, 42.

BRITISH PEERAGE FAMILIES. *See* **Peerage Families.**

BROOKE (H. J.). Sketch of his Life. (From the "Proceedings of the Royal Society"), vii, 286.

BROWN (SAMUEL). On a General Method of Approximation to the Values of Annuities and Assurances for long terms of years depending on one or two lives, i, 20.

- Sketch of the Recent Progress (1851) of the Assurance of Life and Property on the Continent, i, 293, ii, 16.
- On the Collections of Data (1851) in various branches of Assurance, ii, 200.
- A Summary of the Assurance business of Great Britain and other Countries, ii, 209.
- On the Uniform Action of the Human Will as exhibited by its mean results on social statistics, ii, 341, iii, 17. Reference, W. M. Makeham, xvi, 408.
- Table showing the Progress of Life Assurance in Great Britain during the three years 1849, 1850, 1851, ii, 352; 1852, 1853, 1854, vi, 160.
- On the Influence of the Ages of the Parents at the time of Marriage on the Sex of Children and on the Prolificness of Marriages, iii, 17. References, A. Day, xii, 202; J. N. and Dr. C. J. Lewis, xl, 154.
- Mortality amongst Selected Lives in Germany, iii, 29.
- On the Sufficiency of the existing Companies for the Business of Life Assurance; with a List of the Companies at the end of 1852, their Guaranteed and Paid-up Share Capital, &c., iv, 10.
- Translation of A. Quetelet's Paper on the Calculation of Mortality Tables, iv, 27.
- Report of the Proceedings at the Statistical Congress held at Brussels, 19 to 22 September, 1853, iv, 93, v, 25.
- On a Simple Plan of Classifying the Policies of a Life Assurance Company so as to possess at any time the means of forming a Table of the Mortality experienced in the Office, iv, 282.
- Remarks on the Progress of Life Insurance in Germany, v, 160.
- On the Rate of Sickness and Mortality amongst the Members of Friendly Societies in France. (Containing an account of M. G. Hubbard's "Memoire sur l'histoire et l'organisation des sociétés de secours mutuels"), v, 208.
- On the Origin and Progress of the Calculus of Probabilities, vi, 134.
- On the Advantages to Statistical Science of a Uniform Decimal System of Measures, Weights, and Coins throughout the World, vii, 37.
- On the Proportion of Marriages at different ages of the sexes in Belgium, Massachusetts, and England, vii, 188.
- On the Investment of the Funds of Assurance Companies, vii, 241. References, A. H. Bailey, x, 142; J. Coles, xv, 1; J. Burn, xxxiv, 492.

BROWN (SAMUEL) *—continued.*

- An account of the plans, objects, and progress of the International Association for obtaining a uniform Decimal System of Measures, Weights, and Coins, viii, 156, 263.
- On the Mortality amongst American Assured Lives, viii, 184.
- On the Rate of Mortality and Marriage amongst Europeans in India, xi, 1, xii, 276.
- Report made to the International Statistical Congress (1860) as to the objects of the Institute of Actuaries, &c., x, 114.
- Report on the Fifth International Statistical Congress held at Berlin, 6 to 12 September 1863, xi, 195.
- On the Metric System of Weights and Measures, and its proposed adoption in this Country, xi, 263.
- On the present position of Friendly Societies in England and Wales, xi, 333.
- Eighth Census of the United States (1860), xiii, 226, 272.
- On the Mortality in the United States as deduced from the last Census (1860), xiii, 272.
- Report on the Sixth International Statistical Congress (1867), xiv, 165.
- Extracts from his Opening Address as President of Section F (Economic Science and Statistics) of the British Association for the Advancement of Science at the 38th Meeting at Norwich, August 1868, xv, 18.
- Letter communicating French Insurance Statistics, xvi, 72.
- On the Rate of Mortality amongst the Natives as compared with that of Europeans in India, xvi, 187. Reference, A. J. Finlaison, xviii, 164. Annuities and Premiums (3 per-cent) deduced therefrom, H. A. Smith, xviii, 373.
- Tables deduced from the Institute HMF Table adjusted by W. M. Makeham's formula, xvi, 428.
- On the application of the Binomial Law to Statistical Enquiries, illustrated by the law of the growth of man at different ages, xvii, 340.
- Superannuation in Friendly Societies, xxv, 42.
- "Thoughts on Commission, Division of Profits, Selection of Lives, the Mortality in India, and other subjects relating to Life Insurance." *Review*, i, 105*.
- Translation of W. Lazarus' article on Progress and Position of Assurance Companies in Germany in 1855, vii, 217, 289, viii, 45.
- Remarks on his Tables deduced from Rev. J. Hodgson's Observations on the Mortality of the Clergy of England and Wales, W. A. Bowser, xvii, 328; Letter from Mr. Brown on the subject, xvii, 339.
- Prize Fund established, xv, 459.
- Syllabus of Prize Essay, 1883 (Subject, "History of Life Assurance in the United Kingdom"), xxiv, 145.
- Syllabus of Prize Essay, 1891 (Subject, "Enfranchisement of Leaseholds"), xxix, 479.
- Syllabus of Prize Essay, 1899 (Subject, "Actuarial Aspects of Legislation on the subject of Compensation to Workmen for Accidents"), xxxiv, 594.

BROWN (W.). Answers to fallacies on the Decimal Question, Balance of Trade, Exchanges and Common Coins, v, 304.

BROWNE (T. G. C.). Payment to Trustees, xxvii, 510.

— On the Valuation of Premiums, xxxi, 154.

— Method of Division of Profits, xxxii, 194. Reference, T. E. Young, xxxvii, 50.

BRUNE (R.). Tables deduced from the Experience of the Prussian (or Berlin) Widows' Fund for 69 years from 1776 to 1845; showing for males and females separately the numbers living at the beginning of the year, the numbers withdrawn and died; also l_x , d_x , q_x , and e_x , iii, 30. Adjusted by Dr. T. Wittstein; q_x , l_x for Males and Females, xvii, 432, xxiv, 166. References, S. Brown, ii, 205, iii, 29; C. Walford, xix, 187.

BUCHANAN (A.). Abstract of a paper on the Physiological Law of Mortality, and on certain deviations from it observed at the Commencement of Adult Life, vi, 67. Reference, J. Reid, vi, 129.

- BUCHANAN (Dr. J.).** The Use of Quadrature Formulæ and other Methods of Approximation for the Calculation of Survivorship Benefits, xxxvii, 384.
- **Bonuses in Model Office Valuations and their relations to Reserves,** xxxix, 257, 305.
- BUGGE (Prof.).** Historical notice of him, F. Hendriks, i, 19.
- BUILDING SOCIETIES.** Industrial Investment and Emigration, a Treatise on Benefit Building Societies (A. Scratchley). *Review*, i, 360.
- BUMSTED (D. A.).** Translation of G. Hopf's suggestions for Legislation to regulate the Calculation and Investment of the Reserve in Life Assurance Companies, xv, 270.
- Translation of H. Stüssi's article on the Mortality of the Clergy, xviii, 343.
- Translation of Dr. A. Emminghaus's Report on the Condition and Progress of German Life Insurance Companies in 1873, xix, 42; Ditto, in 1881, xxiv, 55.
- Translation of Dr. T. Wittstein's "Mathematical Law of Mortality", xxiv, 153, xxxiii, 399.
- Translation of H. Westergaard's "The Employment of Interpolation in Statistics", xxxii, 276.
- BUNYON (C. J.).** Concerning the Proper Stamps upon Assignments of Policies of Insurance, i, 71*.
- **Concerning the Renewal of Leaseholds for Lives or years that have been the subject of Settlement,** iii, 280.
- On the expression "Evilly disposed", xv, 76; Reply by the Reviewer of his "Law of Fire Insurance, 1st Edition", xv, 159.
- **On the Valuation of Claims upon Current Policies in the Liquidation of a Life Office, with reference to the Decisions in Bell's and Lancaster's Cases,** xvii, 1.
- **On the origin and nature of some of those Limited and Contingent Interests in Property which are commonly submitted to Actuaries for Valuation,** xviii, 1.
- **On Valuation of Policies for Proof in Liquidation,** xviii, 32.
- **On some Legal Incidents affecting the Duration of Base Fees in the Hands of Purchasers,** xviii, 100.
- **Note on Settlement Policies under the "Married Women's Property Acts, 1870 and 1882"**, xxiv, 82.
- "Treatise upon the Law of Life Assurance." *Review*, iv, 145; Ditto, Second Edition, xv, 222.
- "Law of Fire Insurance." *Review*, xiv, 472.
- **On his Scheme for the Liquidation of an Insolvent Life Office,** D. Pitcairn, xv, 385.
- **Extracts from his pamphlet on the Liquidation of an Insolvent Life Office,** xx, 281.
- "The Law of Fire Insurance" (Notice of Publication), xxv, 368.
- "The Law of Life Insurance", Fourth Edition, by J. G. Vesey Fitzgerald, *Review* by J. E. Faulks, xxxix, 120.
- BURN (J.).** On G. King's Inter-Valuation Formula for Exposed to Risk, xxxiii, 278. Reference, T. G. Ackland, xxxiii, 362.
- **Some considerations in reference to the Fall in the Rate of Interest experienced in the past, and the probability of its continuance,** xxxiv, 474; Erratum, xxxvi, 208.
- BURN (J.) and McDONALD (J.).** An Investigation into the Rates of Re-Marriage and Mortality amongst Widows in receipt of relief from the Patriotic (Russian War) Fund, 1854-1900, xxxviii, 433.
- BURRIDGE (A. F.).** On the Rates of Mortality in Victoria, and on the construction of Mortality Tables from Census Returns by the Graphical Method of Graduation, xxiii, 309. References, G. King, xxiv, 126, 203; Author, xxiv, 334, 358; E. M. Moors and W. R. Day, xxxvi, 152; G. H. Ryan, xxxvi, 332; M. D. Grant, xl, 131.
- **On the Rates of Mortality in Australia,** xxiv, 333. Reference, E. M. Moors and W. R. Day, xxxvi, 153.
- **Some account of the Census from 1801-1881,** xxv, 83. References, Dr. R. Dudleyfield, xxxv, 345; G. H. Ryan, xxxvi, 332.

BURRIDGE (A. F.)—continued.

- The fluctuations in the Rate of Mortality in England and Wales, being a review of "Studies in Statistics, Social, Political and Medical" (G. B. Longstaff), xxix, 459.
- Discussion arising from W. B. Paterson's Paper on Contingent Reversions, Reversionary Life Interests, and Life Interests in Possession, xxx, 551.
- Vaccination and the Act of 1898, xxxvii, 245.

BUSINESS OF LIFE ASSURANCE.

- **America.** Official Returns relating to the business of Life Insurance Companies in Massachusetts (1867), xv, 36; Ditto, Other States, xv, 44.
- — Growth of Life Companies (Extracted from the "Spectator" of New York), xviii, 355.
- — Official Returns relating to the business of American Life Insurance Companies in New York (1880), xxiii, 60.
- — A New Departure in reduction of Rate of Interest in calculating Reserves, xxiii, 436.
- — Dividends, xxiv, 52.
- **Australasia.** D. Carment, xxx, 219.
- **England.** Life Assurance in, C. Jellicoe, ii, 171, iii, 33, x, 272.
- **Germany.** On the condition and progress of Assurance Offices in 1867, G. W. Berridge, xv, 55; in 1870, xvii, 209; in 1873, xix, 42.
- — Life Insurance Companies in the year 1881, Dr. A. Emminghaus, xxiv, 55.
- — Management of Foreign Life Insurance Companies according to German Imperial Law, Dr. Karl Samwer, xxxvii, 374.
- **Great Britain.** Tables showing its Progress in, in 1849-51, S. Brown, ii, 352; 1852-4, vi, 160.
- — Particulars of Insurances in force in 1881 (extracted from White's "Insurance Register"), and Progress of Life Assurance Business from 1871-1880, xxiii, 156. *See also* **Board of Trade Returns.**
- **Greater Britain.** A. W. Tarn, xxxiv, 517.
- Estimate (1851) of the New Business and the total sum assured of the British Life Offices, S. Brown, ii, 209.
- The Life Assurance Controversy (1853), C. Jellicoe, iii, 216.
- On the sufficiency of the existing companies, with a list of the companies at the end of 1852, their guaranteed and paid-up capital, &c., S. Brown, iv, 10; F. Hendriks, iv, 339.
- Progress throughout the World from 1859-1883, Marco Besso, xxvi, 426.
- Form of Instructions to Agents in Ireland (1725), xxviii, 218.
- Various classes of Life Assurance Business, A. E. Molyneux, xxviii, 251.
- Progress in United Kingdom during the 50 years 1837-86, D. Deuchar, xxviii, 442.
- Modern Methods of Transacting, B. Newbatt, xxxi, 19.

See also **History of Life Assurance and Life Assurance.**

BYE-LAWS of the Institute, xxvi, 229, xxviii, 489. *See also* **Institute of Actuaries.**

CALCULATING MACHINES. *See* **Arithmometer, Hollerith Electrical Tabulating Machine, Mechanical Aids, and Mechanical Appliances.**

CALCULUS OF FINITE DIFFERENCES. *See* **Finite Differences.**

"CALCUTTA REVIEW", Extract from:—

— On the Prospectuses of the Indian Life Offices, vi, 15.

CALDERON (H. P.). On H. W. Manly's paper "Formulas and Tables for applying Profits to converting Whole-Life Policies into Endowment Assurances and to making Endowment Assurances payable at an earlier age", (xxviii, 333), xxviii, 394.

— Some Notes on Makeham's Formula for the Force of Mortality, xxxv, 157.

CALENDAR YEAR METHOD of arranging data for Mortality Experience, G. H. Ryan, xxvi, 258, xxviii, 221; A. H. Bailey, xxvi, 268; H. W. Manly, xxvi, 272; J. Chatham, xxix, 87; W. J. H. Whittall, xxxi, 163. *See also* **Mortality (4).**

CALIFORNIA. *See* **Foreign Intelligence and Mortality (2).**

CAMPBELL'S (Lord) ACT, 1846, 1864. (Employers' Liability for Injuries to Workmen), Reference, J. Nicoll, xxxvi, 423.

CAMPBELL (R.) on a Test for ascertaining whether an observed Degree of Uniformity, or the Reverse, in Tables of Statistics, is to be looked upon as Remarkable (from the *Philosophical Magazine*), viii, 316. Reference, Author, ix, 216.

— On the Composition for leave to an Assured to reside Abroad, ix, 167.

— On the Stability of Results based upon Average Calculations, considered with reference to the number of transactions embraced, ix, 216.

CANADA.

— Canadian Insurance Acts, 1877 (Extracts), xx, 416; 1886, xxvii, 459; 1894, 1895, xxxii, 200, 221.

— Note as to the Life Insurance Act of the Dominion, xxi, 300.

— Retirants in the Eighth Year, T. B. Macaulay, xxii, 134.

— Report of the Superintendent of Insurance of the Dominion, 1886, xxvii, 456.

— Some Observations on Insurance matters in, G. H. Ryan, xxxii, 39.

— Mortality in, G. H. Ryan, xxxii, 41.

— Rate of Interest in, G. H. Ryan, xxxii, 42.

— System of Banking in, G. H. Ryan, xxxii, 42.

— Registry of Declined Lives in Canadian Companies, G. H. Ryan, xxxii, 43.

— The Work and Development of Life Assurance Companies in, A. W. Tarn, xxxiv, 520.

— Assessment System in, A. W. Tarn, xxxiv, 535.

— Life Assurance Legislation in, A. W. Tarn, xxxiv, 545.

— List of Native Life Offices transacting business in, in 1897, A. W. Tarn, xxxiv, 551.

— Vital Statistics, with particular reference to the Province of Ontario, M. D. Grant, xl, 125.

See also Colonial Intelligence.

CANADA LIFE ASSURANCE COMPANY, Mortality Experience of the. Reference, A. W. Tarn, xxxiv, 542; M. D. Grant, xl, 126.

CANCELMENTS. *See Discontinuances.*

CANCER, Increase of, R. Teece, xxxvi, 89; Dr. A. Newsholme, xxxvi, 113; G. King and Dr. A. Newsholme, xxxvi, 120.

— Excessive Mortality from, and its Possible Association with the Consumption of Alcohol, Dr. A. Newsholme, xxxviii, 347.

CANTELLI (Dr. F. P.), "On Fitting Curves to a Series of Measurements or Observations." *Review* by W. P. Elderton, xxxix, 376.

CAPE OF GOOD HOPE Life Assurance Act, 1891, xxx, 244. Reference (Editorial), xxxv, 379.

— Stamps Act Amendment Act, 1887 (Extracts), xxxv, 380.

— Stamps and Licenses Amendment Act, 1898 (Extracts), xxxv, 383.

CAPITALIZED INTEREST, Income Tax on, J. E. Faulks, xxxviii, 314.

CARD INDEX TO THE "JOURNAL," Announcement of its Completion, xxxvi, 400.

CARD SYSTEM. For purposes of Mortality Investigation. Reference, W. J. H. Whittall, xxxi, 162.

— Origin of. Reference, A. J. Finlaison, xxxi, 197.

CARLISLE TABLE. On its Irregularities, P. Gray, vi, 197.

— Adjusted by P. Gray, vii, 125; W. M. Makeham, ix, 365, xii, 324.

— On its Relation to the Government, the Registrar-General's, and other Tables of Mortality, J. Henry, xi, 89.

— On its Construction, W. M. Makeham, xii, 319.

— On the Method used by Milne in the Construction of the, W. Sutton, xxiv, 110; G. King, xxiv, 186; G. F. Hardy, xxiv, 205.

See also Dr. J. Heysham and W. T. Thomson.

CARMENT (D.). How far can we rely on the Estimated Liability of a Life Office, calculated by means of a Model Office? xxi, 74.

— On the Method of Interpolating the Value of Premiums when these are given only for certain Intervals of Age, xxi, 213.

— On the Application of the Arithmometer to the Construction of Tables of the Values of Endowment Assurance Policies, xxii, 368. Erratum, xxiii, 232. References, F. W. White and W. J. H. Whittall, xxiv, 407; A. W. Sunderland, xxviii, 264; A. D. Besant, xxxi, 366.

— On the Construction of Tables of Values of Endowment Assurance Policies, xxiii, 232.

CARMENT (D.) *continued.*

— On G. F. Hardy's Plan for the Application of Woolhouse's Method of Graduation, xxiv, 221.

— Life Assurance Business in Australasia (abstract from the Inaugural Address to the Insurance Institute of New South Wales, 1892, xxx, 219).

— On the Valuation of Policies subject to Contingent Debts, xxxi, 72. Reference, A. W. Tarn, xxxiv, 519.

CARMENT (D. M.). Tables showing certain Particulars as to Issue Insurances, xxxi, 386.

CARR (T.). On the Value of Reversionary Annuities payable Half-yearly or Quarterly, vii, 109. Errata, vii, at 1. References, T. B. Sprague, xv, 129; W. Evans, xix, 12.

— On the Value of a Policy on the Longest of Two Lives, xiv, 415.

— On a Formula in the Calculus of Finite Differences, xiv, 478.

— On the Formula for the Market Value of a Complete Annuity, xviii, 224.

— On the Value of a Complete Annuity when Payable by m equal Instalments in each year, xviii, 247.

CARRUTHERS (Dr. S. W.). On the Importance and Practicability of a Standard Classification of Impaired Lives, xxxix, 306.

CAYLEY (Prof. A.). On a Question in Probabilities ("A says that B says that a certain event took place; required the Probability that the event did take place, p_1 and p_2 being A's and B's respective Probabilities of speaking the truth"), xxi, 204. Reference, A. Macfarlane, xxii, 356. See also Dr. T. B. Sprague and W. S. B. Woolhouse.

CENSUSES AND CENSUS RETURNS.

— Bombay 1849, i, 83.

— England and Wales 1801 to 1851, Summary by T. R. Edmonds, ii, 67.

— — (1851), E. Cheshire's "Results," *Review*, iv, 147.

— — (1851), On certain Means furnished by it for extending the Application of the Principle of Assurance to the Social Condition, G. Scott, vi, 47.

— — (1851), A. G. Finlaison on Understatement of Ages among the Females (quoted by H. W. Porter, ix, 277; A. H. Bailey, ix, 357).

— — (1861), Summary of General Results (the substance of an Abstract laid before Parliament, 7th June, 1861, prepared by Dr. W. Farr and Mr. Hammack, x, 1).

— — (1901), Digest of the Results, W. Sanders and T. G. Ackland. *Review* (Editorial), xxxviii, 290.

— India, Rates of Mortality among Natives, G. F. Hardy, xxv, 217.

— Ireland (1851), i, 354.

— New Zealand, F. W. Frankland, xxiv, 211.

— Ontario, Canada 1901, Population and Mean Population, Deaths and Central Death Rates, M. D. Grant, xl, 135, 136.

— United Kingdom 1801-1881, A. F. Burridge, xxv, 83.

— United States (1860), S. Brown, xiii, 226.

— Victoria 1836-1881, A. F. Burridge, xxiii, 310.

— West Indian Colonies 1871, J. Stott, xxi, 154.

— Construction of Mortality Tables from, M. von Baumhauer, xvi, 34; M. B. Pell, xxi, 257; A. F. Burridge, xxiii, 317; N. A. Humphreys, xxvii, 493; E. M. Moors and W. R. Day, xxxvi, 151.

— Enumerated Population at Groups of Ages, 1871, A. F. Burridge, xxiii, 312.

— C. D. Higham, xxxv, 442.

— Memorial by the Institute of Actuaries to the President of the Local Government Board as to the taking of the Census in 1901, xxxv, 362. Reference, G. H. Ryan, xxxvi, 333.

— Periods for which Censuses have been taken in Great Britain and Ireland, the Colonies and Dependencies, the Continent and the United States of America, G. H. Ryan, xxxvi, 332.

— Organisation required for Supervision Staff; and Accommodation needed; Appointment and payment of persons employed locally, G. H. Ryan, xxxvi, 338.

— Information to be obtained, G. H. Ryan, xxxvi, 342.

CENSUSES AND CENSUS RETURNS *continued.*

- Tabulation and Publication of Results, G. H. Ryan, xxxvi, 348.
- Legislation Required, G. H. Ryan, xxxvi, 351.
- Decennial Rate of Increase in Population of England and Wales since 1801, G. H. Ryan, xxxvi, 357.
- Population of Europe, G. H. Ryan, xxxvi, 359.
- Scope of the Censuses of the United Kingdom, the Colonies and Dependencies, R. H. Hooker, xxxvi, 362.
- List of References on Census Subjects, G. H. Ryan, xxxvi, 365.
- Correspondence with the Registrar-General as to the British Census of 1901, xxxvii, 317-319.

See also Population Tables.

CENSUS ACT, 1900. Dr. R. Dudfield, xxxv, 341, 365.

CENSUS OFFICE. Correspondence with the, relative to the Tabulation and Publication of certain Statistics of the Indian Government Establishments, xxxvi, 401.

CENSUS REFORM, The Case for, G. H. Ryan, xxxvi, 329.

CENSUS TAKING, Dr. R. Dudfield, xxxv, 341.

"CENTENARIANS AND THE DURATION OF THE HUMAN RACE" (T. E. Young). *Review* by A. Levine, xxxiv, 588.

CENTRAL DEATH RATE. *See* Force of Mortality and Mortality (4).

CENTRAL DIFFERENCE FORMULÆ for Interpolation, J. Spencer, xxxiii, 349.
See also Interpolation.

CERTIFICATION (Actuarial). To Rules of Friendly Societies, C. Jellicoe, iii, 12.
— Of Annuity Tables, W. Sutton, xxvi, 225.

— In connection with Friendly Societies. Historical Memorandum, xl, 212.

CERTIFIED COPY POLICIES (Life Assurance), T. B. Sprague, xxxiii, 376.

CHAMBERLAIN (Rt. Hon. J.). Scheme for National Provident Insurance, W. A. Hunter, xxix, 372, xxx, 315; Sir E. W. Brabrook, xxx, 237.

CHAMBERS (Dr.). Extract from his work on Corpulence or Causes of Fat in the Human Body, i, 87*.

CHANCE. On the Results commonly attributed to, W. A. Guy, v, 315.

See also Probabilities.

"CHANCES OF DEATH AND OTHER STUDIES IN EVOLUTION" (Karl Pearson). *Review* by G. F. Hardy, xxxiii, 530.

CHANDLER (S. C., Jr.). On the Law of the Ages at which Life Insurances are effected, xvii, 56.

— On the Construction of a Graduated Table of Mortality from a Limited Experience, xvii, 161.

CHARLON (M.). On a method of obtaining De Moivre's Formula in the simplest terms, xv, 141.

CHARTER OAK LIFE INSURANCE COMPANY, Reconstruction of. Reference, G. H. Ryan, xxxii, 35.

CHARTER OF INCORPORATION. *See* Institute of Actuaries.

CHATHAM (J.). Assurance on x against y and t years longer, xxv, 439. Reference, A. W. Sunderland, xxvi, 58, xxvii, 85, 92.

— On the relative age of husbands and wives whose marriages are fruitful, xxvii, 37.

— On the construction and use of the Combined Marriage and Mortality Table for Widowers, xxviii, 384. Reference, T. B. Sprague, xxviii, 356.

— An examination of the published experience of several Life Offices and Groups of Life Offices for the Purpose of determining with the greatest accuracy obtainable:—(1) The Rate of Mortality among recently selected lives; (2) The Rate at which that Mortality increases during the ten years after insurance; and (3) whether such rate of increase depends upon the rate of discontinuance or not; with a general outline of the best methods to be pursued in the future collection and compilation of any experience (T. B. Sprague Prize Essay, 1889), xxix, 81. References, P. L. Newman, xxix, 476; T. B. Sprague, xxix, 478, xxxii, 199; W. J. H. Whittall, xxxi, 163, 167, 168, 193; R. R. Tilt, xxxii, 25; T. G. Ackland, xxxiii, 70; F. W. Fulford, xxxv, 207.

CHATHAM (J.)—*continued*.

- On the Valuation of Premiums, xxxi, 79, 154. Reference, T. G. C. Browne, xxxi, 115.
- The Treatment of the Discontinuances in the British Offices' Experience, 1863-1893 (Extracts from *Insurance Record* and *Post Magazine*), xxxi, 310, 312.
- On the Books and Forms to be used in Scheduling the Particulars of the Risks of a Life Assurance Company under its Assurance and Annuity Contracts for Periodical or Interim Valuations, Distribution of Surplus, and for Investigation of the Rates of Mortality, Surrender and Lapse (Messenger Prize Essay, 1895), xxxii, 393. References, T. G. Ackland, xxxiii, 137; W. R. Dovey, xxxiv, 346; R. Todhunter, xxxv, 21; Author, xxxviii, 619.
- On the Graduation of the British Offices' Annuity Experience, 1863-1893, by the Graphic Method, xxxvii, 526.
- On Life Premium Book-Keeping, xxxviii, 619.

CHATHAM (J.) and HEWAT (A.). On an Investigation of the Mortality and Marriage Experience of the Widows' Funds of the Scottish Banks, xxxi, 428.

CHERRIMAN (J. B.). On the American Ten-Year Non-forfeiture Policies, xvi, 384.

- Who first introduced the Symbol (d_x)? xxi, 295. References (Editorial), xxi, 296; J. A. Higham, xxi, 297.
- Formula for Paid-up Policy $\left(1 - \frac{P_x}{P_{x+n}}\right)$, xxi, 298. Reference (Editorial), xxi, 298.

— On the value of an Annuity in which a final payment is made at the end of the term during which the life fails, xxi, 299.

— Correction of J. Valentine's article (xx, 441) on the Life Insurance Act of Canada, xxi, 300.

CHESHIRE (E.). "Results of the Census of Great Britain, 1851." *Review*, iv, 147.

CHILDBIRTH, the risk attending, Sir J. W. Lubbock, v, 290; Dr. S. H. Ward, viii, 342.

CHILDREN. Statistics of New Zealand in regard to Children alive at Death of Father, G. King, xxx, 298.

— Value at death of the Father, of Reversionary Annuity to commence on the death of the mother, and to continue until the youngest surviving child attains the age of 21, E. C. Thomas, xl, 197.

— Temporary Annuity to, on the Death of the Father, O. Schjoll, xl, 206.

See also Mortality.

CHILDREN'S ENDOWMENTS. Table of Single and Annual Premiums deduced from the Mortality among children of Dissenting Ministers, W. A. Bowser, xvii, 35.

CHILDREN'S PENSIONS. H. W. Manly and H. Foot, xxxviii, 101. *See also Widows' and Orphans' Funds.*

CHISHOLM (D.). On a New Method of Constructing a Table of the Probabilities of Survivorship between Two Lives for every Combination of Ages, and also a Table of the Present Value of Survivorship Assurances of £1 on (x) against (y), ii, 305. *See also P. Gray*, v, 107.

— On the proper expression for the value of £1 payable at the instant of death, iii, 336.

— Proper expression for the amount of £1 with the fractional part of a year's interest, iii, 335; Errata, iii, *inset*.

— On the Values of Reversions payable at the instant of death, iv, 70.

— Tables of Single and Annual Premiums for Assurances payable at the instant of Death; Carlisle 3 per-cent, by Milne's Formula, iv, 89; by Sang's Formula, iv, 91.

— "Commutation Tables." J. Meikle, vii, 297; "W. F. B.", Edinburgh, viii, 110; "Joshua Milne", viii, 118; A. De Morgan, x, 301.

- CHISHOLM (J.).** On the arrangement of Commutation (or D and N) Tables, xiv, 200.
- On the Construction of Models of Policy-values, and on a new method of comparing the Reserves for Policies, according to different Tables of Mortality and Rates of Interest, xxv, 141. Reference, Author, xxvii, 442.
- On the Assessment of Life Risks, xxv, 408.
- On Logarithms correct to ten places of decimals, xxvi, 55.
- On the Approximate Calculation of Valuation Reserves, xxvii, 442. Reference, J. Stewart, xxxii, 264, 267.
- Requirements of the various States of the American Union affecting Life Assurance Companies, xxxiii, 336.
- "Tables of the Values of Policies of all duration according to any Table of Mortality, or any Rate of Interest" (*Notice of Publication*), xxv, 368. References, F. E. Colenso (New Formula for converting Whole-Life into Endowment Assurances), xxvii, 409; Author, xxvii, 449; D. J. McG. McKenzie, xxviii, 247.
- Syllabus of Prize Essay, 1896 (Subject—The Relation of the Actuarial Profession to the State), xxxiii, 204.
- Syllabus of Prize Essay, 1899 (Subject—The Rationale of Discounted Bonus Premiums), xxxiv, 595.
- Offer of Prize for Essay. See **Institute of Actuaries.**
- CHOLERA** in England, 1848-9, Dr. W. Farr. *Review*, iii, 184.
- CHRISTIE (ROBERT).** Summary of Accounts of 28 Life Offices, 1844-1852, compiled from his pamphlet, iii, 86.
- Statement of Income, Funds, and total Sum assured, in Scottish Life Offices, x, 235.
- CHRISTISON (Sir ROBERT).** "Investigation of Deaths in the Standard Assurance Company (1853)." *Review*, iv, 76. Reference, H. W. Porter, iv, 256.
- Report on the Causes of Death among the Members of the Standard Life Assurance Company, during the five years ending 15 November 1870, xix, 59.
- "CHRONICLE" (of New York), Extract from:—**
- Returns of Life Insurance Companies in New York, xxiii, 60.
- CHRYSTAL (G.).** "Elementary Algebra." *Review* by T. E. Young, xxvi, 223.
- On some Fundamental Principles in the Theory of Probability. *Review* by G. F. Hardy, xxxi, 315.
- CHURCH LIVINGS,** On the Value of, P. Gray, ii, 271.
- CLAIM ACCELERATION RESERVE.** C. D. Higham, xxiv, 76, xxvi, 478.
- See also **Adjustment for early Payment of Claims.**
- CLARE (G.).** "The London Daily Stock and Share List", a Course of Lectures. *Review* by A. R. Barrand, xxxiv, 394.
- CLASSIFICATION OF POLICIES,** so as to possess, at any time, the means of forming a Table of the Mortality experienced, S. Brown, iv, 282.
- On a form of valuation book for valuing Whole Term Assurances on Single Lives, by J. Coles, vii, 179.
- See also **J. Chatham.**
- CLAUSON (A. C.).** Syllabus of Lectures on the "Companies Acts", xxxiv, 418.
- "Companies Acts," a Course of Lectures. *Review* by W. O. Nash, xxxv, 49.
- CLERGY,** Mortality Experience of Danish, Greek and Prussian. See **Mortality (3).**
- CLERGY MORTALITY TABLES (Rev. J. Hodgson's).** W. A. Bowser, xvii, 328; S. Brown, xvii, 339; F. B. Wyatt, xxviii, 489.
- CLERGY MUTUAL LIFE OFFICE,** Mortality Experience of, T. B. Sprague, xxvi, 317.
- CLERICAL, MEDICAL and GENERAL LIFE ASSURANCE SOCIETY.** Some mention of a Method adopted in investigating the experience of, W. J. H. Whittall, xxxi, 161.
- CLERKS' ASSOCIATIONS.** (1) An Investigation of some of the Methods for deducing the Rates of Mortality, and of Withdrawal, in Years of Duration; with (2) the Application of such Methods to the computation of the Rates experienced, and the Special Benefits granted, by Clerks' Associations, T. G. Ackland, xxxiii, 68, 164.
- COAN (T. M.).** Does Life Insurance Insure? (from "Harper's Monthly Magazine") xxiii, 128.

- COCKBURN (H.).** Presidential Address (November 1901), xxxix, 1.
- COEFFICIENTS,** for finding Life Annuity-Values at any Rate of Interest, J. Naylor, xxiii, 133; T. J. Searle, xxviii, 192; G. King, xxviii, 214. *See also* Constant Coefficients.
- COLENSO (F. E.).** On the Application of Makeham's Modification of Gompertz's Expression for the Law of Mortality to the Practical Calculation of the Values of Survivorship Benefits, xxxi, 337. Errata, xxxii, 186. Reference, L. W. Meech, xxxii, 71; Author, xxxii, 185, 186.
- On the Calculation of Contingent Assurances, xxxii, 185.
- **Review:** —
- — A Treatise on the Mathematics of Life Insurance, by C. L. Landré, xxxvii, 107.
- COLES (J.).** On the Method of Valuing Whole-Term Assurances on Single Lives by Classification, vii, 179.
- Railway Debenture Stock considered as a Security for the Investment of the Funds of a Life Assurance Society, xv, 1. References, A. R. Barrand, xxxiv, 463; J. Burn, xxxiv, 491.
- COLLECTIVE ASSURANCE,** Formulae for Benefits according to the Principle of, R. P. Hardy, xxx, 79.
- COLONIAL INTELLIGENCE:**
- Life Insurance Acts.**
- Australia (South), 1882, xxvi, 24. References R. Teece, xxv, 356; C. D. Higham, xxvi, 328; Editorial, xxix, 32.
- Australia (Western), 1889, xxix, 32.
- Canada, 1877 (certain Sections), xx, 446; 1886, xxvii, 159; 1894 and 1895, xxxii, 200, 224. Reference, G. H. Ryan, xxxii, 41.
- Cape of Good Hope, 1891, xxx, 244. Reference (Editorial), xxxv, 379.
- New Zealand, 1873 (certain Sections), xx, 442.
- Tasmania (certain Sections), 1874, xx, 441.
- Victoria, 1873, xx, 59.
- Australasia,** Annual Death Rate in Victoria, 1871-80, A. F. Burrridge, xxiii, 313.
- Annual Death Rate for Years 1871-1879, A. F. Burrridge, xxiii, 314, xxiv, 333.
- Reference to Laws Relating to Assignment of Life Policies, C. D. Higham, xxvi, 327.
- Population Tables (Victoria, New South Wales, Queensland, South Australia, Western Australia), A. F. Burrridge, xxiv, 335.
- Settlement Policies in the Colonies, R. Teece, xxv, 361.
- Summary of Revenue Accounts (1886), of Twelve Australian Companies, xxvi, 476.
- Assignment of Life Policies (Editorial), xxvii, 420.
- Life Insurance Business, D. Carment, xxx, 219.
- The Work and Development of Life Assurance Companies in, A. W. Tarn, xxxiv, 522, 523.
- Life Assurance Legislation in, A. W. Tarn, xxxiv, 545.
- List of Native Life Offices transacting business in, in 1897, A. W. Tarn, xxxiv, 554.
- Cancer Mortality in (Diagram and Tables), R. Teece, xxxvi, 92, 102, 103.
- Income Tax and Life Assurance, J. B. Gillison, xxxviii, 325.
- Canada,** Life Assurance Companies' Acts, 1877 (certain Sections), xx, 446; 1886, xxvii, 159; 1894 and 1895, xxxii, 200, 224.
- Note as to the Life Insurance Act of the Dominion, xxi, 300.
- Retirants in the eighth year, T. B. Macaulay, xxii, 134.
- Assignment of Life Policies (Editorial), xxvii, 420.
- Report of the Superintendent of Insurance of the Dominion, 1886, xxvii, 156.
- Insurance Department at Ottawa, Reference, G. H. Ryan, xxxii, 39.
- Some Observations on Insurance Matters in, G. H. Ryan, xxxii, 39.
- Mortality in, G. H. Ryan, xxxii, 41.
- Rate of Interest in, G. H. Ryan, xxxii, 42.
- System of Banking in, G. H. Ryan, xxxii, 42.
- Registry of Declined Lives in Canadian Companies. G. H. Ryan, xxxii, 43.
- The Work and Development of Life Assurance Companies in, A. W. Tarn, xxxiv, 520.

COLONIAL INTELLIGENCE: Canada *continued.*

Assessment System in, A. W. Tarn, xxxiv, 535.

Life Assurance Legislation in, A. W. Tarn, xxxiv, 545.

List of Native Life Offices transacting business in, in 1897, A. W. Tarn, xxxiv, 551.

Crawford v. Canada Life Assurance Company (Chose in Action—Assignment Notice—Life Insurance), xxxv, 40.

Legislation in regard to Compensation to Workmen for Accidents, J. Nicoll, xxxvi, 552.

Vital Statistics, with particular reference to the Province of Ontario, M. D. Grant, xl, 125.

Cape Colony, Legislation in regard to Compensation to Workmen for Accidents, J. Nicoll, xxxvi, 477, 552.

Stamp Act Amendment Act, 1887 (extracts), xxxv, 380.

Stamp and Licenses Amendment Act, 1898 (extracts), xxxv, 383.

See also **South Africa.**

India, Diagram showing Mortality per-cent amongst Officers of the Bengal Army according to Tables by W. S. B. Woolhouse, Griffith Davies, and F. G. P. Nelson, Sr., *follows* ii, 396.

Mortality and Marriage Rate among Europeans, S. Brown, xi, 1, xii, 276.
Mortality Experience among Natives compared with Europeans, S. Brown, xvi, 187.

— Mortality Experience of the Uncovenanted Service Family Pension Fund, 1837 to 1872, A. J. Finlaison, xviii, 153, 167; Tables deduced from, T. H. Cooke, xix, 223.

— Mortality Experience: Among Natives, G. F. Hardy, xxv, 217; Among Europeans, Dr. T. G. Lyon, xxix, 511.

Assignment of Life Policies (Editorial), xxvii, 420.

— The effect of the Indian Coinage and Paper Currency Act, 1893, Silver Currency Question, A. J. Finlaison, xxxi, 413.

— The Work and Development of Life Assurance Companies in, A. W. Tarn, xxxiv, 525.

Jamaica, Rate of Mortality among Europeans in, J. Marshall, iv, 39. *See also* **West Indies.**

Natal, Legislation in regard to Compensation to Workmen for Accidents, J. Nicoll, xxxvi, 552.

New South Wales, Rate of Mortality in, M. B. Pell, xxi, 257; A. F. BurrIDGE, xxiv, 341; E. M. Moors and W. R. Day, xxxvi, 151.

— Mortality from various Classes of Diseases (1873), A. F. BurrIDGE, xxiii, 311.

— Population Tables (1870-1881), A. F. BurrIDGE, xxiv, 340.

— Population of (Extract from the *Times*), i, 353.

— Some Notes on Valuation Methods, with special reference to J. Chatham's Paper on this subject (xxxii, 393); W. R. Dovey, xxxiv, 346.

New Zealand, Life Assurance Companies Act, 1873, xx, 412.

— Friendly Societies, F. W. Frankland, xxii, 149; G. F. Hardy (Experience of), xxvii, 262.

— Mortality from various Classes of Diseases (1875), A. F. BurrIDGE, xxiii, 311.

— Healthiness of, A. K. Newman, xxiv, 211.

— Statistics deduced from Census Returns and Registry of Deaths, F. W. Frankland, xxiv, 211.

— The Progress of Life Assurance in, A. W. Tarn, xxxiv, 522.

Queensland, Population Tables (1870-1881), A. F. BurrIDGE, xxiv, 343.

— Legislation in regard to Compensation to Workmen for Accidents, J. Nicoll, xxxvi, 551.

South Africa, Work and Development of Life Assurance Companies in, A. W. Tarn, xxxiv, 519.

— Life Assurance Legislation in, A. W. Tarn, xxxiv, 546.

— List of Native Life Offices transacting business in, in 1897, A. W. Tarn, xxxiv, 555.

South African Republic (Transvaal), Law regulating Assurance Companies, xxxii, 61.

COLONIAL INTELLIGENCE — *continued*.

South Australia, Mortality from various Classes of Diseases (1875), A. F. BurrIDGE, xxiii, 311.

— Population Tables (1870-1881), A. F. BurrIDGE, xxiv, 311.

— Legislation in regard to Compensation to Workmen for Accidents, J. Nicoll, xxxvi, 551.

Tasmania, Life Assurance Companies Act, 1874 (certain Sections), xx, 411.

— Mortality from various Classes of Diseases (1873), A. F. BurrIDGE, xxiii, 314.

— Legislation in regard to Compensation to Workmen for Accidents, J. Nicoll, xxxvi, 552.

Victoria, Population of, in 1858, viii, 344; Mortality in, A. F. BurrIDGE, xxiii, 309; E. M. Moors and W. R. Day, xxxvi, 151.

— Rate of Mortality from various Classes of Diseases in (1873), A. F. BurrIDGE, xxiii, 314.

— Census Returns (1836-1881), A. F. BurrIDGE, xxiii, 310; 1870-1881, A. F. BurrIDGE, xxiv, 337.

— Legislation in regard to Compensation to Workmen for Accidents, J. Nicoll, xxxvi, 551.

West Indies, Mortality among Assured Lives, J. Stott, xxi, 153.

— (chiefly Barbados), G. F. Hardy and H. J. Rothery, xxvii, 161.

— Standard Life Insurance Company, G. F. Hardy and H. J. Rothery, xxvii, 163.

— Work and Development of Barbados Mutual Office, A. W. Tarn, xxxiv, 519.

COLQUHOUN (E.), The Legal Stamp Duty on Re-assurance Policies, effected by way of Guarantee on a Copy of the Original Policy, xxviii, 166.

COLUMNAR METHOD, On the Calculation of Survivorship Annuities by the, J. Meikle, xi, 40.

COMBINATIONS, On some Considerations on the Theory of, P. Hardy, ii, 151, 259.

— On some Questions of, A. De Morgan, v, 93.

— (Triadic) of Fifteen Symbols, On, W. S. B. Woolhouse, x, 275.

COMMENCING AGE in a Mortality Table, T. B. Sprague, xxxi, 208.

COMMON EMPLOYMENT, The Doctrine of, J. Nicoll, xxxvi, 423.

COMMUTATION COLUMNS, Report on the arrangement of, I. C. Pierson, xxxiii, 31.

COMMUTATION OF BONUSES, On, J. R. Macfadyen, xiv, 364.

COMMUTATION SYMBOLS, Different Meanings of, in Different Countries, xxxiii, 11, 14, 31.

COMMUTATION SYSTEM, On its history, F. Hendriks, i, 1.

— On the Facilities afforded in it by the introduction of Columns of Differences, S. L. Laundry, viii, 165.

COMMUTATION TABLES, On D. Chisholm's, J. Meikle, vii, 297.

— On the Construction and use of them for Calculating the Values of Benefits depending on Life Contingencies, P. Gray, x, 84, 169, 220.

— As to the initial system, A. De Morgan, x, 302.

— Reason for the Name, A. De Morgan, xii, 333.

— Reason for the notation D and N , A. De Morgan, xiv, 353*n*.

— On the arrangement of, J. Chisholm, xiv, 200.

— Joint Lives; On the tables based on A. De Morgan's form of $D_{x:y}$, W. Sutton, xx, 114.

— Note on the Formation of, M. B. Pell, xxi, 274. Reference, J. C. Hamyngton, xxi, 455.

— Select Lives, T. B. Sprague, xxii, 401-403.

— Damaged Lives, T. B. Sprague, xxii, 430.

— Marriage and Mortality, T. B. Sprague, xxviii, 370; J. Chatham, xxviii, 384.

— Institute of Actuaries Experience, 1863, HM 3 $\frac{3}{4}$ per-cent, R. P. Hardy, xxxi, 82, 83.

— Allowing for Mortality and Withdrawal. Clerks' Associations. Interest 3 per-cent, T. G. Ackland, xxxiii, 197.

COMMUTATION TABLES *continued.*

- Including the "Lapse Element", A. Hunter, xxxvi, 57.
- Staff Pension Funds, Hypothetical Experience. 4 and 3 per-cent interest, H. W. Manly and E. C. Thomas, xxxvi, 263; H. W. Manly, E. C. Thomas and J. N. Lewis, xxxvii, 207; H. W. Manly and H. Foot, xxxviii, 137.

"COMPANIES ACTS", Syllabus of Lectures on, by A. C. Clauson, xxxiv, 418.

- — A Course of Lectures by A. C. Clauson. *Review* by W. O. Nash, xxxv, 49.

COMPANIES' REPORTS. *See Bonus (or Investigation) Reports.*

COMPANION TO THE BRITISH ALMANAC. Reprint of A. De Morgan's Papers on Single-Life Contingencies, xii, 328, xiii, 129.

COMPENSATION to Workmen for Accidents. Actuarial aspects of Legislation in regard to, J. Nicoll, xxxvi, 417.

COMPLETE ANNUITY. *See Annuities (Complete).*

COMPOUND INTEREST, Equivalent to Simple Interest paid when due, A. De Morgan, i, 335.

- On (Reprint from Sherwin's Mathematical Tables), Dr. E. Halley, ix, 259.
- W. Sutton's Lecture, xvi, 434. Notice therein of Lt.-Col. W. H. Oakes' work, xvi, 437.

- On the Approximate Solution of Problems without the aid of Tables, M. N. Adler, xxiii, 359.

COMPOUND INTEREST AND ANNUITIES-CERTAIN. On the Application of the Calculus of Finite Differences to Problems in the Doctrine of, W. C. Otter, vii, 333, viii, 19.

COMPOUND INTEREST TABLES (Oakes'), D. J. McG. McKenzie, xxiii, 407; (Thoman's), D. J. McG. McKenzie, xxiii, 411.

COMPOUND STATUS, Annuity on a, G. King, xxii, 296.

COMPOUND SURVIVORSHIP, Assurances, W. M. Makeham, x, 241, xii, 61.

- On the value ($a_{\frac{1}{2}|x}$), G. King, xxvi, 285.
- Annuities and Assurances, F. E. Colenso, xxxi, 346.
- Annuity. On the Approximate Evaluation of the Integral for $a_{yz}|x$, R. Todhunter, xxxiii, 311.
- Annuity, On the, G. F. Hardy, xxxiv, 93.

COMPUTATION, On the Comparative Advantages of the Old and the New Methods of, P. Gray, i, 96*; S. L. Laundry, viii, 58, 168; "Joshua Milne", viii, 118.

CONCEALMENT OF PREVIOUS PROPOSALS. *See Legal Decisions* (London Assurance Corporation v. Mansell).

CONGRESSES, ACTUARIAL. *See International Actuarial Congresses.*

CONGRESSES, STATISTICAL. *See International Statistical Congresses.*

CONNECTICUT MUTUAL LIFE OFFICE, Mortality Experience of, D. H. Wells, xxv, 368; G. H. Ryan, xxvi, 253, xxviii, 221; B. Newbatt, xxvii, 190; J. Chatham, xxix, 85, 122; W. J. H. Whittall, xxxi, 181; T. B. Sprague, xxxi, 225.

CONSOLS, Average Prices, 1786-1898 (Diagram), J. Burn, xxxiv, 488.

- Lowest prices of, J. Sorley, xxxiv, 505.

CONSTANT COEFFICIENTS, The Theory of, J. Naylor, xxiii, 420.

CONSTANT FACTORS. *See Factors (Constant).*

CONSTRUCTION OF TABLES. *See* P. Gray, v, 107, x, 84, 169, 220, xiii, 61, 149, 292, xiv, 307, xvii, 266, xviii, 20, 123; Dr. W. Farr, ix, 121, 188; W. S. B. Woolhouse, xiii, 75; J. Chisholm, xiv, 200; Jardine Henry, xiv, 212; Dr. Zillmer, xv, 26; H. W. Manly, xv, 169; H. A. Smith, xvi, 75; G. King, xx, 258.

- — Probabilities of Survivorship between Two Lives for every combination of ages; also Present Value of Survivorship Assurances of £1 on (x) against (y), D. Chisholm, ii, 305; P. Gray, v, 107.

- — From a Limited Experience, S. C. Chandler, Jr., xvii, 161.

- — Select Tables, T. B. Sprague, xxi, 229, 406, xxii, 391.

- — Gray's Method of Continuous Process, J. C. Hannington, xxi, 455, xxii, 136.

CONSTRUCTION OF TABLES *continued.*

- Values of Endowment Assurance Policies, D. Carment, xxii, 368, xxiii, 232.
- From Census Returns by the Graphic Method, A. F. Burridge, xxiii, 309.
- From Census Returns, M. von Baumhauer, xvi, 31; N. A. Humphreys, xxvii, 493.
- Marriage and Mortality Tables, J. Chatham, xxviii, 384.
- From a single Census and the Deaths in the years adjacent thereto, E. M. Moors and W. R. Day, xxxvi, 151.
- Staff Pension Funds, For Valuation of, H. W. Manly and E. C. Thomas, xxxvi, 211.
- Staff Pension Funds. For obtaining the Value of the Return, on Death or Withdrawal, of the Total Contributions based on Salary with Compound Interest at rate j per annum, discounted at rate i per annum, E. C. Thomas, xxxviii, 276.
- British Offices' Life Tables, 1893. Assured Lives and Annuitants. An account of the Principles and Methods adopted. *Review* by R. Todhunter, xxxviii, 356.

See also Mortality Tables.

CONSUMPTION. Its bearing on the risk of Life Insurance, Dr. S. H. Ward, viii, 329, 332; H. W. Porter, ix, 12, 93.

- Observations of Lives with History of, H. W. Manly, xxx, 97.
- In Relation to Life Assurance, Dr. T. G. Lyon, xxx, 120; T. B. Macaulay, xxx, 335.
- Family History of, T. B. Macaulay, xxx, 335; H. W. Manly, xxx, 338; Dr. T. G. Lyon, xxxi, 155; H. Westergaard, xxxi, 375.
- "The Declension of Phthisis", by Sir Hugh Beevor. *Review* by Dr. A. Newsholme, xxxiv, 584.

See also Mortality and Phthisis.

CONSUMPTIVE FAMILY HISTORY. T. B. Macaulay, xxxi, 80; Dr. T. G. Lyon, xxxi, 155; H. Westergaard, xxxi, 375. *See also Consumption, Phthisis, and Mortality.*

CONSUMPTIVE LIVES, Rate of Mortality among, H. W. Manly, xxx, 113.

CONTINGENT ASSURANCE PREMIUMS. P. Gray, xxi, 67; J. Chatham, xxv, 439; A. W. Sunderland, xxvi, 58, xxvii, 81.

CONTINGENT ASSURANCES. *See Survivorship Assurances.*

CONTINGENT DEBTS. On Policies in lieu of extra Premiums, S. Younger, x, 268; Sir E. W. Brabrook, x, 349; H. A. Smith, x, 352; P. Gray, x, 354; A. W. Sunderland, xxix, 149; G. F. Hardy, xxxii, 153.

— On the Valuation of Policies subject to, D. Carment, xxxi, 72.

— System in the Colonies, A. W. Tarn, xxxiv, 539.

CONTINGENT INTERESTS IN PROPERTY. On their Origin and Nature, C. J. Bunyon, xviii, 1.

CONTINGENT REVERSIONS. *See Reversions.*

CONTINUED SICKNESS. Interpretation of the term in Friendly Societies, A. W. Watson, xxxv, 305.

CONTINUOUS ASSURANCES. *See Instant of Death.*

CONTINUOUS METHOD.

— W. M. Makeham, xvii, 306; T. B. Sprague, xx, 118; G. F. Hardy, xxiv, 109; G. King, xxvi, 278; T. G. Ackland, xxvi, 292; W. S. B. Woolhouse, xxvii, 155; H. J. Rothery, xxvii, 454; G. H. Ryan, xxx, 2.

— In Life Assurance Theory, W. S. B. Woolhouse, xv, 95; W. Sutton, xv, 307.

— A Table for determining the amount of a Continuous Annuity-Certain, W. M. Makeham, xv, 432.

— Analogy between an Annuity-Certain and a Life Annuity, G. H. Ryan, xxv, 443.

— In connection with calculation of Death Strain, G. H. Ryan, xxx, 198; T. G. Ackland, xxx, 207.

— Tables of Continuous Temporary Annuities, $OM\ 2\frac{1}{2}$ per-cent, S. G. Dunn and B. May, xxxviii, 51; $OM\ 2\frac{3}{4}$ per-cent, A. Levine, xl, 369.

"CONVERSION TABLES" (W. Orchard). *Review*, i, 363.

CONVEYANCING ACTS, 1881 and 1882. *See Legislation.*

COOK (A. J.). Notes on Friendly Society Legislation (Correction), xxv, 216.

COOKE (T. H.). Letter communicating 3 per-cent Tables deduced from the Indian Uncovenanted Service Experience of A. J. Finlaison, xix, 223.

COPYHOLD ENFRANCHISEMENT, On Tables for, E. Smyth, xxi, 381.

— G. S. Mathews, xxviii, 1.

— Scale of Compensation, Copyhold Act, 1887, E. Smyth, xxviii, 67.

COPYHOLD ESTATES, On the value of, P. Gray, ii, 278; T. Weddle, xviii, 221.

— Heriots in, T. B. Sprague, xxviii, 64.

COPYHOLD LEASES, E. Ryley, iv, 367.

CORPORATION STOCKS (Six). Sum of prices 1885-1898, yielding total of £20 10s. 0d. Interest per annum (Diagram), J. Burn, xxxiv, 488.

CORRELATION, Between Duration of Life and the number of Offspring, Miss M. Beeton, G. V. Yule and Karl Pearson, xxxv, 458.

CORRESPONDENCE (Anonymous).

— "M. C. I. A." on Medical Fees paid by Life Assurance Companies, i, 92*.

— "W. S." on the proper mode of estimating the value of permanent and terminable Annuities, i, 93*.

— "A Subscriber" on the value of annuities to pay certain given rates of interest on the Purchase Money during their continuance, and to replace the original value at certain other rates, i, 101*. *See also P. Hardy*, i, 1*.

— "Venus" on the desirableness of availing ourselves of the best existing data when such as are perfect cannot be obtained, ii, 294.

— "A Fellow of the Institute" on qualification and enrolment of actuaries, iii, 332.

— "Young Associate" on the Interest Question, iv, 72.

— "I." on the Interest Question, iv, 253.

— "Venus (Edinburgh)" on the interest in assurances made by one person on the life of another, v, 77. Reference, A. H. Bailey, v, 168.

— "An Actuary" on A. Scratchley on Post Obits, vii, 52.

— "G." on A. Scratchley on Post Obits, vii, 56.

— "W. F. B." on certain advantages afforded by D. Chisholm's Tables recently published, viii, 110.

— "Joshua Milne" on the advantages of the Modern Methods of Computation in Life Assurance Calculations, viii, 118. Reference, S. L. Laundry, viii, 168.

— "Philo-Scotie" on the Pamphlet recently published by the Scottish Equitable Life Assurance Society, viii, 297.

— "One who was at the Trial, &c.", on the case recently tried of Black v. The English Widows' Fund Life Assurance Society, viii, 357.

— "H. A." on the Superannuation of Employees in Assurance Offices, ix, 366.

— "Juvenis", as to the value of a reversion to an estate on the death of the last of four lives, xii, 182. References, "T. M.", xii, 301; "Fellow of the Institute", xii, 301.

— "Fellow of the Institute" on the value of a perpetuity to be enjoyed by 48 after the death of the survivor of 55, 53, 51, and 50, xii, 301.

— "T. M." on the value of a perpetuity to be enjoyed by 48 after the death of the survivor of 55, 53, 51, and 50, xii, 301.

— "J. C.", A practical question as to the terms of an Advance on the Security of a Life Annuity and the reversion to a house, xiv, 71.

— On T. B. Macaulay's letter on the relation between the weight and height of men, xxiii, 61.

COST OF LIFE ASSURANCE Abridged and adapted from the "Review", xxiii, 360; A. G. Mackenzie, xxix, 188.

COTTON-SPINNING PROBLEM, W. S. B. Woolhouse, xi, 224.

COUTTS (C. R. V.). Reversionary Securities as Investments, xl, 317.

CRAWLEY (C.). "The Law of Life Insurance, with a chapter on Accident Insurance." *Review* by G. H. Ryan, xxiv, 136.

CRELLE'S TABLES, G. F. Hardy, xxiv, 254; G. H. Ryan, xxx, 200.

- CRISFORD (G. S.).** On the Values that should be allowed by a Life Office for the surrender of the Policies considered under their various aspects as affecting the interests of the Office and of the Policyholders. (Messenger Prize Essay, 1878), xxi, 301. References, F. W. Fulford, xxxv, 200; F. L. Cutting, xxxv, 203.
- On C. Walford's Paper "On the Position of Life and other Assurance Associations in relation to their Local Medical Examiners", xxii, 188.
- Office Premium Loadings and how they are dealt with under the various methods of valuation and modes of distribution of profits, xxv, 181. (Part ii), xxv, 387. Reference, M. N. Adler, xxv, 405.
- CURJEL (H. W.).** On Joint Life Annuities, xxxviii, 353. Reference, Author, xxxviii, 334.
- CURRENCY.** On a Method of substituting Francs and Centimes for the present English Metallic, J. Yates, v, 146.
- "CURRENT AGE."** On the phrase, T. B. Sprague, xxix, 478.
- CURTIS (F. A.).** On the best method of constructing an Index of Lives Assured, viii, 51.
- A Scheme for the Collection of Data for periodical observation of mortality among lives selected for assurance: illustrated by examples from observations of mortality in Austria, xix, 229.
- Life Assurance in France, xix, 414.
- CUTTING (F. L.).** The Surrender-Value Provisions of the Massachusetts Insurance Laws, xxxv, 203.
- CZOERNING (BARON),** Account of Government Statistics in Austria, v, 28.
- DALCHOSNIE DISENTAIL CASE,** T. B. Sprague, xxiii, 77. Reference, "Insurance Monitor" of New York, xxiii, 435.
- DALE (W.).** Notice of his "Calculations deduced from first principles in the most familiar manner by plain Arithmetic, &c., intended as an Introduction to the Study of the Doctrine of Annuities", F. Hendriks, i, 15*.
- DANINOS (S. A.).** An Account of the Insurance Companies in Austria, iii, 121.
- DANISH CLERGY,** Mortality among, from 1650 to 1878, H. Westergaard, xxiii, 29, 40.
- DANISH SOCIETIES, 1878-82,** Sickness Rates, G. F. Hardy, xxvii, 270.
- DATA.** Letter from "Verus" as to the use of imperfect Data when such as are perfect cannot be obtained, ii, 294.
- For the Problem of Evolution in Man: A First Study of the Longevity and the Selective Death-Rate in Man, Miss M. Beeton and Karl Pearson, xxxv, 112.
- DAVIES (G.).** Notice of his Tables for Life Contingencies, P. Hardy, i, 5*.
- On his solution of the question as to the value of an annuity "forborn", P. Hardy, vii, 1.
- "Treatise on Annuities", *Review*, vi, 234; *see also* xviii, 72.
- On the arrangement of his D and N Tables, A. De Morgan, x, 301; J. Clisholm, xiv, 200.
- On his Method of Calculating Annuities, A. De Morgan, xii, 328, 348.
- On his demonstration of the Value of Annuities payable half-yearly, &c., T. B. Sprague, xiii, 192.
- On his Formula for the value of a complete annuity, T. B. Sprague, xiii, 361.
- On the Value of Reversionary Life Interests, xv, 138.
- Reference to his Method of Graduation, W. Sutton, xx, 176.
- Memoir, by his nephew, Thomas Barlow, v, 337.
- DAVIS (W.).** Columns D, N, S, 3 per-cent, computed from Dr. W. Farr's Healthy Life Table, x, 59.
- DAY (A.).** On the Determination of the Rates of Premium for Assuring against Issue, viii, 127.
- On the Purchase of Life Assurance Policies as an Investment, viii, 326. Reference, T. B. Sprague, xiv, 119.
- On the Statistics of First and subsequent Marriages among the Families of the Peerage, considered specially with reference to the Calculation of Premiums for Assurance against Issue, x, 181. Reference, S. Brown, xi, 20.

DAY (A.)—*continued.*

— On the Statistics of Second Marriage among the Families of the Peerage, xii, 185. Reference, J. N. and Dr. C. J. Lewis, xl, 161.

— Presidential Addresses (November, 1886, xxvi, 161. Reference, A. G. Mackenzie, xxix, 198. November, 1887, "History of Staple Inn"), xxvii, 1.

— On a Long-lived Family, xxx, 263.

— Obituary Notice of, xxxix, 126.

DAY (A.) and BAILEY (A. H.). On the Rate of Mortality prevailing among the Peerage Families during the Nineteenth Century, ix, 305. References, G. W. Berridge, xii, 220; W. M. Makeham, xiii, 340; C. Walford, xix, 191.

DAY (W. R.) and MOORS (E. M.). On the Rates of Mortality in New South Wales and Victoria, and the Construction of a Mortality Table from a single Census and the Deaths in the Years adjacent thereto, xxxvi, 151.

DAYS OF GRACE. H. C. Thiselton, xxxi, 46.

DEATH LOSSES in the Union Mutual Life Insurance Company (Portland, Maine). See **Dr. T. A. Foster and Dr. T. B. Sprague.**

DEATH RATE. See **Mortality.**

DEATH STRAIN. On the True Measure of, on the Funds of a Life Assurance Society, C. D. Higham, xx, 153.

— On a Means of Calculating the expected, G. H. Ryan, xxx, 196.

— New Method of Finding the, G. F. Hardy, xxx, 205. References, F. Bell, xxx, 208; T. J. Searle, xxx, 211, 493; G. H. Ryan, xxx, 532; J. Chatham, xxxii, 401.

— In Contingent and other Special Policies, T. J. Searle, xxx, 503; J. A. Robertson, xxx, 534.

— Calculation of the Expected, Methods of, C. D. Higham, xxxii, 397; G. H. Ryan, xxxii, 399; A. F. Burrige, xxxii, 400; G. F. Hardy, xxxii, 401; T. J. Searle, xxxii, 402. Prospective and Retrospective Methods, J. Chatham, xxxii, 400.

— Summary of various Methods of Ascertaining, J. Chatham, xxxii, 405.

"DEATHS IN THE STANDARD ASSURANCE COMPANY" (Sir R. Christison). *Review*, iv, 76.

DEBENTURES. Of Trading Companies as Investments for Life Assurance Funds, considered in their Legal and Financial Aspects, A. R. Barrand, xxxiv, 421.

— Legal Aspects of, A. R. Barrand, xxxiv, 428.

— Financial Aspects of, A. R. Barrand, xxxiv, 449.

— Stamps on, J. E. Faulks, xxxv, 154.

DECIMAL COINAGE, WEIGHTS, AND MEASURES, and Decimal Numeration, W. T. Thomson, iv, 216; A. M. Robertson, iv, 370.

— On the Objections urged against the plan of Decimal Coinage, C. Jellicoe, v, 293. Reply by F. J. Minasi, vi, 57.

— Answers to Fallacies on the Decimal Question, W. Brown, v, 304.

— On Decimal Coinage (from the "National Review"), A. De Morgan, vi, 75.

— Plan for simplifying and improving Measures, Weights, and Money of the Country, without materially altering the present Standards, Sir C. W. Pasley, vi, 241.

— On the advantages to statistical science of a uniform decimal system of Measures, Weights, and Coins throughout the world, S. Brown, vii, 37.

— Account of the Plans, Objects, and Progress of the International Association for obtaining a uniform Decimal System of Measures, Weights, and Coins, S. Brown, viii, 156, 263.

— On Decimals and Measures, L. Levi, x, 337.

DECIMALS. On the rules for converting the parts of £1 into, A. De Morgan, xi, 53.

DECLINE IN ENGLISH DEATH-RATE, N. A. Humphreys, xxvii, 486.

DECLINED LIVES, Proposal to Register same, C. Walford, xxii, 7. Reference, T. B. Sprague, xxii, 17.

— The Registry of, in Canadian and American Companies, G. H. Ryan, xxxii, 43.

- DECREMENTAL FORCES**, On an application of the Theory of the Composition of, W. M. Makeham, xviii, 317.
- DECREMENT OF HUMAN LIFE**, A formula for expressing the, Dr. T. Young, vi, 351, vii, 14.
- DEFERRED ANNUITIES**. See *Annuities (Deferred)*.
- DEFERRED ASSURANCES**, With Deferred Premiums, Fines for, T. B. Sprague, xxii, 433, xxvii, 121; A. H. Bailey, xxvii, 116; H. J. Rothery, xxviii, 483; H. E. Nightingale, xxx, 35; G. King, xxx, 77.
- With Returnable Premiums, J. Stirling, xxxi, 259.
- DE FOREST (E. L.)**. Formula for Force of Mortality, xxii, 231.
- DE HERMANN (M.)**. Account of Government Statistics in Bavaria, v, 27.
- DE MOIVRE (A.)**. References to his Treatise on Annuities, E. J. Farrer, iii, 234, 338; P. Gray, xii, 177.
- "Annuities on Lives (1743)" and "Doctrine of Chances (1756)", D. J. McG. McKenzie, xxiii, 162.
- Formula for the Law of Mortality, P. Gray, xii, 232; W. M. Makeham, xiii, 346. On a Method of obtaining it, M. Charlon, xv, 141.
- DE MONTLUC (L.)**. The Law of Life Insurance in France, as affected by a recent decision of the Supreme Court of Judicature, xvii, 189.
- DE MORGAN (A.)**. Note on the equivalence of Compound Interest with Simple Interest paid when due, i, 335.
- On a Method of Checking Annuity Tables at different Rates of Interest, by help of one another, ii, 390.
- Account of a Correspondence between George Barrett and Francis Baily, iv, 185. Reference, F. Schooling, xxxiii, 367.
- A Problem as to increasing Annuities-Certain, iv, 243. (Solution, iv, 277.)
- Letter as to manuscripts of Francis Baily's works, iv, 275.
- **On the Demonstration of Formulæ connected with Interest and Annuities**, iv, 277.
- On some Questions of Combination, v, 93.
- Formula for the approximate value of an Annuity at Simple Interest, v, 256, xiii, 143.
- On Decimal Coinage (extracted from the "National Review"), vi, 75.
- On the Determination of the Rate of Interest of an Annuity, viii, 61. References, J. J. McLauchlan, xviii, 297; W. Sutton, xix, 79; S. W. Newling, xxxvii, 437.
- On the statement, revived in W. B. Hodge's paper on Interest, that Sir W. Petty wrote Graunt's Observations, viii, 166; Mr. Hodge's Reply, viii, 231. Reference, F. Hendriks, x, 207.
- On the Property of Gompertz's Law of Mortality (the Law of Uniform Seniority), viii, 181.
- On an unfair suppression (by T. R. Edmonds) of due acknowledgment to the writings of Benjamin Gompertz, ix, 86; Mr. Edmonds' replies, ix, 170, 327. Reference, T. B. Sprague, ix, 288.
- On Newton's Table of Leases, ix, 185.
- On Gompertz's Law of Mortality, ix, 214.
- On the Authorship of the Treatise on Probabilities published by the Society for the Diffusion of Useful Knowledge, ix, 238.
- On the Rule (Simpson's) for finding the Value of an Annuity on three lives (from the "Philosophical Magazine") (showing that it follows from Gompertz's Law of Mortality), x, 27, 237; see also viii, 181. References, W. S. B. Woolhouse, x, 127, xv, 399.
- "Mr. Edmonds; College Life", x, 29.
- On W. S. B. Woolhouse's paper on Gompertz's Law of Mortality, x, 237.
- On the rejection of Fractions of a Pound in extensive Valuations, x, 247. Reference, W. M. Makeham, xvi, 410.
- A Query about Interest Accounts, x, 281. Reference, A. H. Turnbull, x, 357.
- On the Forms under which Barrett's Method is presented, and on Changes of Words and Symbols, x, 301. References, J. Chisholm, xiv, 200; I. C. Pierson, xxxiii, 36.

DE MORGAN (A.) —*continued.*

- On the Rules to be observed in converting the parts of £1 into decimals, xi, 53.
- **A Budget of Paradoxes**, extracted from the *Athenæum*, xi, 130, 181, 280, xii, 32, 101, 230, 294, xiii, 51, 176, 231, xiv, 107, xvi, 44.
- On a Problem in Annuities (as to the value of an annuity payable at equal intervals in each year, and on Argobast's Method of Development, xii, 206.
- On the summation of Divergent Series, xii, 245.
- **On the Calculation of Single-Life Contingencies** (from the Companion to the British Almanac), xii, 328, xiii, 129. Errata, xiii, 119. References, H. A. Smith, xiv, 158; J. Chisholm, xiv, 207. See also **P. Gray**, x, 84, 169, 220.
- Fourier's Statistical Tables, xiv, 89.
- On the Final Law of the sums of Drawings, xiv, 175.
- Some account of James Dodson, F.R.S., xiv, 311.
- Remark on W. S. B. Woolhouse's paper on General Numerical Solution, xv, 327.
- On the application of the Differential and Integral Calculus to "Interest" questions (quoted by E. J. Farren), v, 254.
- Reference to his article on quadratures in the *Educational Times*, W. S. B. Woolhouse, xiii, 119.
- On his Formula for the value of a complete Annuity, T. B. Sprague, xiii, 360.
- Value of a Policy—Formula—Milne, xiv, 69. Solution of Problem proposed by him, T. Marr, xiv, 156.
- Memoir of, by his Wife. *Review* by C. D. Higham, xxv, 137.
- "Essay on Probabilities," References, W. Sutton, xxvii, 102; T. G. Ackland, xxvii, 158.

DENMARK. See Danish Clergy, Danish Societies, and Foreign Intelligence.

DENSITY OF POPULATION, Effect of, on Rates of Mortality and Sickness in Friendly Societies, A. W. Watson, xxxv, 271.

DEPARCIEUX (A.). Reference to his Mortality Table, S. Brown, ii, 205.

DE PARIEU (E.). Account of John De Witt. Translated by F. Hendriks, viii, 205.

DEPPING (G. B.). Translation of Extracts as to Tontin, from his "Correspondence administrative sous le règne de Louis XIV.," F. Hendriks, x, 208.

DETERMINANTS, Theory of, T. E. Young, xxvi, 149.

DEUCHAR (D.). On the Interpretation of the Statements required by the "Life Assurance Companies Act, 1870", with Special Reference to the Question of Expenses, xviii, 323. Reference, J. R. Macfadyen, xix, 153.

— On the Measure of Expenses in Life Assurance Companies, xix, 303. Reference, J. M. McCandlish, xx, 25.

— **The Progress of Life Assurance Business in the United Kingdom during the last Fifty Years.** (Extract from Inaugural Address to the Actuarial Society of Edinburgh, 1887-88), xxviii, 112. References, A. G. Mackenzie, xxix, 187; D. Carment, xxx, 227; J. Burn, xxxiv, 492.

— Obituary Notice of, xxxix, 126.

DEUCHAR (J. J. W.). On Negative Policy Values, xix, 97. References, W. T. Gray, xx, 73, 150, 310; G. King, xx, 148.

— Some Account of the French General and National Insurance Companies, xix, 135.

DEVONSHIRE & CO. The Liability of Life Assurance Companies to Pay Income Tax upon Income arising from Investments in Foreign Countries. Legal Decisions, xxxvii, 402.

DE WITT (JOHN). A Restoration of his Treatise on Life Annuities, F. Hendriks, ii, 121, 222, iii, 93. See also **S. Brown**, vi, 136.

— On his Hypothesis as to the Rate of Mortality, W. Orchard, ii, 393.

— Twenty Years' Interregnum in the Stadtholdership of the Seventeenth Century, by E. De Parieu. Translated by F. Hendriks, viii, 205.

— **"DE WITT AND ACTUARIAL SCIENCE IN HOLLAND."** *Review* by F. Hendriks, xxxiv, 386.

DIAGRAMS.

(1). *Arranged according to Authors' Names.*

- Ackland, T. G., xxxvii, 120.
 Ackland, T. G. and Bacon, J., xxxviii, 569.
 Allin, S. J. H. W., *follow* xxxix, 352.
 Bacon, J. and Ackland, T. G., xxxviii, 569.
 Beeton, Miss M. and Pearson, Karl, xxxv, 119, 123, 125.
 Beeton, Miss M., Yule, G. U. and Pearson, Karl, xxxv, 476-479.
 Berridge, G. W., xii, *at* 221.
 Brown, S., xi, *at* 1, 32.
 Burn, J., xxxiv, 488.
 Burn, J. and Macdonald, J., *follow* xxxviii, 494.
 Burrige, A. F., xxiii, 326, xxix, 470, xxxvii, 256-280.
 Calderon, H. P., xxxv, 164, 172.
 Chandler, S. C., Jr., xvii, *at* 62.
 Chatham, J., xxvii, 41, xxix, 176-7.
 Chatham, J. and Hewat, A., xxxi, 441-7.
 Chisholm, J., xxv, 143, 144, 152, 153, 154, 417.
 Curtis, F. A., xix, 242.
 Day, A., viii, 136, x, *at* 180.
 Day, W. R. and Moors, E. M., xxxvi, 184.
 Dovey, W. R., xxxiv, 356.
 Elderton, W. P., xxxvii, 506, 507.
 Fackler, D. P., xxxvii, 10.
 Farr, Dr. W., ix, *at* 188.
 Grant, M. D., xl, 134.
 Hardy, G. F., xxvii, 294, xxxviii, 505, 506.
 Hewat, A. and Chatham, J., xxxi, 441-7.
 Homans, S., viii, 184.
 Hooker, R. H., xxxvi, 346.
 Humphreys, G., xviii, 186.
 Jellicoe, C., i, 178, iv, *at* 201.
 King, G., xix, 405, xxiv, 200, xxx, 312-3.
 King, G. and Newsholme, Dr. A., xxxvi, 128-130.
 Lawson, R., xix, 110.
 Low, G. M., xviii, 211.
 McDonald, J. and Burn, J., *follow* xxxviii, 494.
 Manly, H. W., xxvii, 298, xxx, 112-3.
 Meikle, J., xxiii, 404.
 Moore, R. M., xxxviii, 238, 248.
 Moors, E. M. and Day, W. R., xxxvi, 184.
 Newsholme, Dr. A. and King, G., xxxvi, 128-130.
 Pearson, Karl and Beeton, Miss M., xxxv, 119, 123, 125.
 Pearson, Karl, Beeton, Miss M. and Yule, G. U., xxxv, 476-479.
 Rea, C. H. E., xxxiv, 110.
 Rusher, E. A. and Schooling, F., xxxvii, *follow* 560, 566.
 Schjoll, O., xxviii, 98, xl, 208.
 Schooling, F. and Rusher, E. A., xxxvii, *follow* 560, 566.
 Spens, W., x, *at* 60.
 Sprague, T. B., xxi, 92, 93, 107, 256-7, xxii, 88, 89, 273, 274, 276, 363, xxxvi, 94, 97, 108-9, 111, 320.
 Stüssi, H., xviii, 353.
 Sutton, W., xxiv, 414.
 Teece, R., xxxvi, 92.
 Terry, J., x, *at* 136.
 Thomson, H. A., xxxiv, 8, 10, 14-21, 30-33.
 Tilt, R. R., xxxii, 19.
 Watson, A. W., xxxv, 274.
 Westergaard, H., xxxii, 278.
 Wittstein, Dr. T., xxiv, 156.
 Woolhouse, W. S. B., x, *at* 120, xiii, *at* 200, xxi, 45, 58.
 Young, Dr. T., vii, *at* 16.
 Yule, G. U., Beeton, Miss M. and Pearson, Karl, xxxv, 476-479.

DIAGRAMS—continued.

(2). Arranged according to subject matter.

- Abstainers and Non-abstainers Comparative Mortality. R. M. Moore, xxxviii, 238, 248.
- Ages of Husbands and Wives whose Marriages are Fruitful. J. Chatham, xxvii, 44.
- American Tontine and Mutual Assessment Schemes. Annual payments to be made by a person of 40 according to level premiums and assessment plans. H. W. Manly, xxvi, 208.
- Annuities. Values of at 4 per-cent interest, for select Assured Male Lives, deduced from the Equitable Tables. W. Spens, x, at 60.
- Assessment of Life Risks. Number living at every interval of age out of whom one dies in a year (HM). J. Chisholm, xxv, 417.
- Average Sums at Risk, Scottish Offices' Experience. G. M. Low, xviii, 211.
- Bachelors per 1,000 living in England and Wales. G. King, xxx, 312-3.
- Births, Deaths and Marriages for 50 years in England and Wales. A. F. BurrIDGE, xxix, 470.
- Book-keeping (Actuarial). Specimen forms of books and schedules. W. R. Dovey, xxxiv, 356.
- British Offices' Life Tables, 1893. Graduation of the Whole-Life Without Profit Mortality Table—Male Lives. G. F. Hardy, xxxviii, 505, 506.
- Brune's Observations— l_x and q_x . Dr. T. Wittstein, xxiv, 156.
- Cancer Mortality in the Australasian Colonies. R. Teece, xxxvi, 92.
- Curves showing the Annual Deaths per million aged 25 and upwards distributed in Age Groups according to the English Life Table No. 3, and Scottish Widows' Fund Experience. G. King and Dr. A. Newsholme, xxxvi, 128-130.
- Carlisle Table—Milne's Graduation. W. Sutton, xxiv, 114; G. King, xxiv, 200.
- Census Results, England and Wales. A. F. BurrIDGE, xxix, 470; G. King, xxx, 312-3.
- Clergy Mortality. H. Stüssi, xviii, 353.
- Consols, Average prices of, 1786-1898. J. Burn, xxxiv, 488.
- Construction of Mortality Tables, Computed Number living at each age Unadjusted; also computed yearly Mortality per-cent, unadjusted, and adjusted according to the Seventeen Offices' Experience Table. W. S. B. Woolhouse, xiii, at 200.
- Consumptive Lives, q_x . H. W. Manly, xxx, 112-3.
- Corporation Stocks (Six). The sum of the prices of, yielding a total of £20 10s. 0d. Interest per annum. J. Burn, xxxiv, 488.
- Deaths, Marriages and Births for 50 years in England and Wales. A. F. BurrIDGE, xxix, 470.
- Discontinuances, their influence on Mortality. G. King, xix, 405.
- Distribution by Age of Applicants for Life Insurance. S. C. Chandler, Jr., xvii, at 62.
- Distribution of Births and Marriages over Year in the Province of Ontario. M. D. Grant, xl, 134.
- Endowment Assurance Policy, Reserve on an. H. A. Thomson, xxxiv, 8, 10, 14-21.
- Endowment Assurance Policies. Reversions HM $2\frac{1}{2}$ per-cent (Curves $y = A_x \cdot \overline{v}|n$). H. A. Thomson, xxxiv, 30, 31.
- English Life Table No. 1. q_x according to different methods of graduation. A. F. BurrIDGE, xxiii, 326.
- Evolution in Man. Correlation between Duration of Life and the Number of Offspring, Miss M. Beeton, G. U. Yule and Karl Pearson, xxxv, 476-479.
- Expectation of Life. "Eagle" Unsound Lives and Seventeen Offices' Experience compared, G. Humphreys, xviii, 186.
- Family Annuities. England and Wales Census (1881): (1) Curve of the number of Bachelors per 1,000 Males living in each year of age; (2) Curve of the number of Husbands per 1,000 Males living in each year of age; (3) Curve of the number of Widowers per 1,000 Males living in each year of age. Annuities at $2\frac{1}{2}$ per-cent to age 14, G. King, xxx, 312-3.

DIAGRAMS. (2). *Arranged according to subject matter—continued.*

- Farmers' Life Table. H. Westergaard, xxxii, 278.
- Friendly Societies. Comparative Cost of Sickness. G. F. Hardy, xxvii, 291.
- Graduation. W. S. B. Woolhouse, xxi, 45.
- Curve representing l_x , W. S. B. Woolhouse, xxi, 58.
- Specimen curves, based on a consideration of the first and second differences, T. B. Sprague, xxvi, 91.
- Curve assuming constant first differences in the rate of mortality, T. B. Sprague, xxvi, 97.
- (1) Female Government Annuitants—representing graphically A. J. Finlaison's adjustment; (2) Female Government Annuitants—4 years after purchase; (3) Female Government Annuitants—4 years after purchase, ages 20-70, first adjustment by grouping; (4) Female Government Annuitants—4 years after purchase, ages 70-100; (5) Showing the mortality among the Peerage Females, and among the Females of the Institute Experience, 5 and 10 years respectively after entry; (6) Ages 50-70; (7 and 8) Ages 20-50. T. B. Sprague, xxvi, 108-9.
- Ansell's Method. T. B. Sprague, xxvi, 111.
- Exposed to Risk and Deaths (HF Table); Force of Mortality at Mean Age of Five-year Groups (HF Table). H. P. Calderon, xxxv, 164, 172.
- By Means of Frequency Curves. British Offices' Temporary Assurance Experience (1893). W. P. Elderton, xxxvii, 506-507.
- Healthy Districts Table. Showing Numbers Living and Dying at Different Ages. Dr. W. Farr, ix, at 188.
- Hourly Distribution of Mortality. R. Lawson, xix, 110.
- Husbands per 1,000 Living in England and Wales. G. King, xxx, 312-3.
- Indian Army (Bengal). Mortality per-cent, according to Tables by W. S. B. Woolhouse, Griffith Davies, and F. G. P. Neison, Sr., *follows* ii, 396.
- Industrial and Ordinary Whole-Life Assurances, Distribution over stated Periods of Life. C. H. E. Rea, xxxiv, 110.
- Industrial Assurances (Whole-Life). Full Rate of Lapse observed at Central Ages at Entry and in Years of Duration, as adjusted for use in a Valuation. T. G. Ackland and J. Bacon, xxxviii, 569.
- Institute Experience (1863), showing the Relation of the Ungraduated HM^{50} and HM Mortality Rates to those for under 5 Years. R. R. Tilt, xxxii, 19.
- Interpolation. Neison's Method. T. B. Sprague, xxii, 273.
- S. Brown's Method. T. B. Sprague, xxii, 274.
- Woolhouse's Method. T. B. Sprague, xxii, 276.
- Madras Military Fund. Rates of Mortality, Withdrawal, Marriage, and Retirement. S. Brown, xi, at 1, 32.
- Map of England and Wales showing the distribution of Occupations. A. W. Watson, xxxv, 274.
- Marriage Rate per-cent (Annual) of Bachelors and Widowers among Peerage Families and the General Population. A. Day, x, at 180.
- Marriage. Probability that a marriage entered into at successive ages will be fruitful. T. B. Sprague, xxii, 363.
- Probabilities of, of Scottish Bankers compared with other marriage rates. A. Hewat and J. Chatlam, xxxi, 441.
- Probabilities of, according to Norwegian and German Statistics. O. Schjoll, xl, 208.
- Marriages, Births and Deaths for 50 years in England and Wales. A. F. Burridge, xxix, 470.
- Mean Age of Father at Death for Sons Dying at a given Age. Miss M. Beeton and Karl Pearson, xxxv, 119, 123.
- Mean Age of Man at Death for a Brother Dying at a given Age. Miss M. Beeton and Karl Pearson, xxxv, 125.
- Mortality Experience. According to the "Equitable", "Town Males" and "Scottish Amicable"; and percentage deduced for the first six years of Assurance. W. Spens, x, at 60.
- Of the "Austrian Gresham" compared with the Seventeen Offices' Experience. F. A. Curtis, xix, 242.

DIAGRAMS. (2). *Arranged according to subject matter—continued.*

- Mortality Experience of the Mutual Life Insurance Co. of New York, 1858, compared with other Tables. S. Homans, viii, 184.
- Mortality Investigations. Specimen Cards and Mechanical Appliances used by the Actuarial Society of America. D. P. Fackler, xxxvii, 10, 11, 12, 14.
- Mortality per-cent, Amongst Officers of the Bengal Army. Data by F. G. P. Neison, Sr., and W. S. B. Woolhouse. C. Jellicoe, i, 178.
- Comparative. "Eagle" Experience and Seventeen Offices' Experience. C. Jellicoe, iv, at 201.
- Mortality rates, According to Gotha, Equitable, Institute, Scottish Amicable and New York Experiences. J. Chatham, xxix, 176-7.
- Compared:—HM, HM⁽⁵⁾, OM, OM⁽⁵⁾, EM and EM⁽⁵⁾. T. G. Ackland, xxxvii, 120.
- Mortality Tables, Analogies of different. Dr. T. Young, vii, at 16.
- New South Wales and Victoria. Population and Death Curves. E. M. Moors and W. R. Day, xxxvi, 184.
- Norwegian General Widows' Fund Experience. O. Schjoll, xxviii, 98.
- Number Living according to Seventeen Offices' Experience and Gompertz's Formula. W. S. B. Woolhouse, x, at 120.
- Number of Persons living in Tasmania at each Year of Age according to Census Schedule, showing the tendency to cluster round decennial periods. R. H. Hooker, xxxvi, 346.
- Patriotic (Russian War) Fund. Rate of the Re-Marriage and Mortality amongst Widows in receipt of relief during the period 1854-1900. J. Burn and J. McDonald, xxxviii, *follow* 494.
- Peerage Mortality. Males. Probability of living a year. G. W. Berridge, xii, at 224.
- Perforated Cards for facilitating Calculations, introduced by P. Gray. A. Day, viii, 136.
- Policy Life Lines (Life Lines giving equal values of Policies). J. Meikle, xxiii, 404.
- Policy Values. Effect of Increased Mortality upon: (1) q_x by several Tables; (2) $K_x = \frac{1+a_x}{1+a_{x+1}}$, T. B. Sprague, xxi, 92-3.
- Growth of. J. Chisholm, xxv, 143.
- Sums of. J. Chisholm, xxv, 114, 152, 153.
- Model, representing the Values of Policies of all duration, J. Chisholm, xxv, 154.
- Probability of Dying in a Year, amongst Scottish Bankers, compared with other Rates of Mortality. A. Hewat and J. Chatham, xxxi, 444.
- Amongst the Wives and Widows of Scottish Bankers, compared with other Rates of Mortality. A. Hewat and J. Chatham, xxxi, 447.
- Provident Life and Trust Company's Experience. Percentage of Actual to Expected Deaths. T. B. Sprague, xxvi, 320.
- Railway Debenture Stocks, Average Rate of Interest yielded by, (1870-1897). J. Burn, xxxiv, 488.
- Relative Ages of Husbands and Wives whose Marriages are Fruitful. J. Chatham, xxvii, 41.
- Smallpox, Comparative Influence of, on Mortality in London; in Countries in which the Vaccination legislation varies; in England and Wales, divided into Age-groups; and the Mortality from other zymotic diseases in England and Wales; also the Rate of Attack and Mortality among the Unvaccinated and the Vaccinated in the Epidemic at Sheffield in 1887-1888. The Attacks and Deaths from Small-pox in different armies. A. F. Burrbridge, xxxvii, 256-280.
- South African War, 1899 to 1902. Death Rates per 1,000 for: (1) All forces; (2) N.C.O.'s and Men; (3) Assured Yeomanry and Volunteers. From: (a) All causes combined; (b) Wounds; (c) "Other causes." F. Schooling and E. A. Rusher, xxxvii, *follow* 560, 566.
- Surplus. Ratio of Distribution as affected by: (1) Age at Entry (after five years); (2) Age of Policy. J. Terry, x, at 136.

DIAGRAMS. (2). *Arranged according to subject matter—continued.*

Temporary Annuity Curves, ($y = ax; n=1$), $H^M 2\frac{1}{2}$ per-cent. H. A. Thomson, xxxiv, 32, 33.

Victoria and New South Wales. Population and Death Curves. E. M. Moors and W. R. Day, xxxvi, 181.

Widowers per 1,000 Living in England and Wales. G. King, xxx, 312, 3.

Widowers, Rate of Re-Marriage of (unadjusted). T. B. Sprague, xxii, 88. (Adjusted). T. B. Sprague, xxii, 89.

Widows' and Orphans' Pension Funds. Experience of the Presbyterian Church of England Ministers' Widows' and Orphans' Fund (1881 and 1902). S. J. H. W. Allin, xxxix, *follow* 352.

DIETERICI (M.). Account of Government Statistics in Prussia, v, 26.

DIFFERENCES. On the Construction of Tables by the Method of, P. Gray, xiii, 61, 149, 293, xiv, 307.

"DIFFERENT ASPECTS OF FAMILY PHTHISIS in Relation especially to Heredity and Life Assurance" (Dr. R. E. Thompson). *Review* (Editorial), xxiv, 413.

DIFFERENTIAL CALCULUS, On its Application to Interest Questions, E. J. Farren, v, 251.

DIFFERENTIAL AND INTEGRAL CALCULUS, Its Application to Life Contingencies, F. E. Coleuso, xxxi, 350.

DIFFERENTIAL COEFFICIENTS OF A FUNCTION. On the method of calculating them from the Differences, W. M. Makeham, xvi, 98.

DISCONTINUANCES. Their effect on Rate of Mortality, J. A. Higham, i, 179; T. B. Sprague, xv, 328; G. King, xix, 394.

— Tables showing rate of, W. Spens, x, 197, 204; G. King, xix, 392, 393, 394.

— On Retirants in the eighth year, T. B. Macaulay, xxii, 134.

— Their probable effect on the rate of Mortality, W. T. Gray, xxiv, 256; T. B. Sprague, xxiv, 293, xxix, 177; W. M. Makeham, xxviii, 185; J. Chatham, xxix, 81, 103, 157.

— On the Value of the Option of Withdrawal in Deferred Annuity Contracts, W. B. Paterson, xxvi, 465.

— Rates of, in the Pole Star Life Office of Stockholm, T. B. Sprague, xxvi, 471.

— Effect of, in Friendly Societies, G. F. Hardy, xxvii, 312; H. W. Manly, xxvii, 343; W. Sutton, xxvii, 412; G. H. Ryan, xxxv, 324; F. Schooling, xxxv, 325.

— How increase in Rate of Mortality is affected by, J. Chatham, xxix, 81, 103, 157. Reference, T. G. Ackland, xxix, 182; F. W. Fulford, xxxv, 207.

— Statistics and Tables based on the Experience of the Hearts of Oak Benefit Society for the period 1881-1891, R. P. Hardy, xxxi, 137, 141.

— On the Treatment of Incomplete Years of Exposure in a Mortality Experience derived from Records of Assured Lives, G. J. Lidstone, xxxi, 304.

— The Treatment of, in the British Offices' Experience, 1863-1893, G. H. Ryan, xxxi, 309, 313; J. Chatham, xxxi, 310, 312; T. B. Sprague, xxxi, 311.

— High Percentage of, in America, G. H. Ryan, xxxii, 45, 46.

— As affected by Rates of Non-Renewal, T. G. Ackland, xxxiii, 68, 362; R. Todhunter, xxxiii, 273.

— Under Industrial Assurance Policies, C. H. E. Rea, xxxiv, 107.

— Rate of, as experienced by Life Assurance Companies in the Colonies, A. W. Tarn, xxxiv, 524.

— Methods of Analysing and presenting the Secession Experience of Friendly Societies, A. W. Watson, xxxv, 268.

— The Effect of, in Calculating Premiums and Reserves, A. Hunter, xxxvi, 51.

— In Pension Funds, J. McGowan, xxxvii, 33.

— Tabulation of, in the British Offices' Experience, 1863-1893, T. G. Ackland, xxxvii, 495.

— Allowance for, in the Valuation of Whole-Life Industrial Assurances, T. G. Ackland and J. Bacon, xxxviii, 539.

— The Effect upon Pure Premium Policy-Values upon the introduction of the Rate of, G. J. Lidstone, xxxix, 209.

- DISCOUNTED BONUS POLICIES.** G. King, xxxvi, 41.
- DISCOUNTED BONUS PREMIUMS,** Notes on their use, G. F. Hardy, xxxi, 261.
— On the Rationale of, H. Moir, xxxvi, 4.
- DISEASED LIVES.** Reference to Walford's "Insurance Cyclopædia", A. F. BurrIDGE, xxiv, 113. *See also Invalid Lives.*
- DISEASES,** On intensity of, at different periods of Life, F. G. P. Neison, Sr., i, 82*.
— Table showing the Experience of the Gotha Life Office, vi, 8.
— Of the Eagle Life Office, v, 349.
Corpulence, in connection with Life Insurance, Dr. Chambers, i, 87*.
— Influence of Selection on the Mortality from Different Classes of, W. R. Dovey, xxiii, 285.
Deaths from different Classes of, in New South Wales (1873), New Zealand (1875), South Australia (1875), Tasmania (1873), Victoria (1873), A. F. BurrIDGE, xxiii, 311; Dr. E. Symes Thomson, xxiii, 332; New Zealand Government Insurance Department (1871-1880), xxiii, 413.
— Deaths from various, (Barbados Mutual Experience), G. F. Hardy and H. J. Rothery, xxvii, 182.
— Syphilis as affecting Life Insurance Risks, Dr. E. J. Marsh, xxxii, 296.
— The Increase of Cancer, R. Teece, xxxvi, 89; G. King and Dr. A. Newsholme, xxxvi, 120.
— The possible association of the consumption of Alcohol with excessive Mortality from Cancer, Dr. A. Newsholme, xxxviii, 347.
- DISENTAIL,** Report of the Proceedings in the Dalchousie Case, McDonald v. McDonalds, xxiii, 77. Reference ("Insurance Monitor" of New York), xxiii, 135.
- DISTRIBUTION (or Division) of Profit or Surplus.** *See Surplus.*
- DIVER (O. F.).** On a property of the O^[M] Select Tables, and its application to the Valuation of Whole-Life Policies, xl, 15. Reference, D. C. Fraser, xl, 123.
- DIVISION (and Multiplication),** On a New Method of performing approximately certain Operations in, J. A. Robertson, xxxii, 160.
- d'OCAGNE (M.).** "The Simplification of Calculations by Mechanical and Graphical Processes." *Review* by W. R. Stroug, xxxix, 377.
- DODSON (JAMES), F.R.S.,** Some account of, A. De Morgan, xiv, 341.
- DONALD (A. G.).** Note on the Methods followed in the Registration of Deeds affecting Land in Scotland, xxxix, 255.
- DOUBLE ENDOWMENT ASSURANCES,** Reserve Value of, A. Fraser, xxxiv, 102.
— On Extra Risks in relation to, A. Levine, xxxiv, 514.
— Valuation of, R. Todhunter, xxxv, 22.
- DOVEY (W. R.).** On the Influence of Selection on the Mortality from Different Classes of Diseases amongst Assured Lives, xxiii, 285.
— Some Notes on Valuation Methods, with special reference to J. Chatham's Paper (xxxii, 393) on this subject. Being Presidential Address delivered to the Actuarial Society of New South Wales, xxxiv, 346.
- DOWNES (J. J.).** Abstract of his Mortality Experience of the Economic Life Office, vii, 78.
— The Method devised by, for deducing the Experience of the Economic Life Office. Reference, W. J. H. Whittall, xxxi, 162, 171.
- DOWNES (O. G.).** Translation of Quetelet's Letters on the Theory of Probabilities. *Review*, i, 362.
- DRACH (S. M.).** On the relative vitality of the Sexes, vi, 232.
- DUBLIN,** A short account of the Early Bills of Mortality in, W. R. Wilde, iii, 248.
- DUBROCA'S "REVUE DES ASSURANCES",** Extracts from:—
— French Tontine Associations, i, 63.
— Notice of the Institute of Actuaries and of the Assurance Magazine, i, 77*.
— Remarks quoted from and applied to the Actuarial Profession, i, 262.
Reference to it, S. Brown, i, 294.
- DUDFIELD (Dr. R.).** Census Taking, xxxv, 341.
- DUNCAN (Dr. J. MATTHEWS),** "Fecundity, Fertility and Sterility", T. B. Sprague, xxii, 117, xxv, 163.

- DUNN (S. G.) and MAY (B.).** Tables of the Values of Continuous Temporary Annuities for the Valuation of Endowment Assurances in Groups. OM Mortality $2\frac{1}{2}$ and 3 per-cent interest, xxxviii, 51.
- DUPLICATE POLICIES,** Method of treating, in a Mortality Investigation, T. B. Sprague, xxxi, 207, xxxiii, 373; J. Meikle, xxxi, 216.
- DURATION,** Methods of Calculating, in the construction of a Mortality Table. *See* **Mortality Tables, Construction of.**
- DURATION OF LIFE,** as appearing from the Census Tables and the Registrar-General's Returns of Births and Deaths, On the Average, C. W. Merrifield, vi, 175.
- Effect of Decline in the Death Rate on, N. A. Humphreys, xxvii, 486. *See also* **Expectation of Life.**
- "On Centenarians and the Duration of the Human Race" (T. E. Young. *Review* by A. Levine, xxxiv, 588.
- Data for the Problem of Evolution of Man. A First Study of the Inheritance of Longevity and the Selective Death Rate in Man, Miss M. Beeton and Karl Pearson, xxxv, 112.
- And the number of Offspring, Correlation between, Miss M. Beeton, G. U. Yule and Karl Pearson, xxxv, 458.
- EAGLE INSURANCE COMPANY,** Mortality Experience, C. Jellicoe, iv, 199. References, S. Brown, iv, 283; C. Walford, xix, 187; J. Chatham, xxix, 97; W. J. H. Whittall, xxxi, 170.
- Mortality Experience of Invalid Lives, 1808-1871, G. Humphreys, xviii, 178.
- EAST INDIES,** Mortality among European Troops during years 1840 to 1848 (Parliamentary Return), i, 79.
- Rate of Mortality in, S. C. Thomson, xxi, 180; G. F. Hardy, xxv, 217. *See also* **Mortality (2), East Indies.**
- EASTON (J.).** Extracts from his "Human Longevity", i, 239.
- EASTWOOD (Dr. J. W.).** On Life Insurance and Suicide, xx, 349.
- "ECONOMIC JOURNAL", Extract from:—**
- Some Remarks on the Mortality among Persons with Consumptive Family History, H. Westergaard, xxxi, 375.
- ECONOMIC LIFE OFFICE,** Mortality Experience, J. J. Downes, vii, 78. References, J. Chatham, xxix, 84; W. J. H. Whittall, xxxi, 162.
- EDEN (Sir F. M.).** On Personal and Unlimited Responsibility, iv, 355.
- EDINBURGH, ACTUARIAL SOCIETY OF.** *See* **Actuarial Society of Edinburgh.**
- "EDINBURGH REVIEW", Extract from:—**
- On the History and Tendency of Past Legislation with reference to Friendly Societies, xviii, 47.
- EDITORIAL REMARKS.**
- Life Assurance Companies Act, 1870, xvi, 1.
- Married Women's Property Act, 1870, xvi, 19.
- Life Insurance among Employees of Life Offices, xxii, 365.
- Married Women's Policies of Assurance (Scotland) Act, xxiii, 49.
- Issue Insurances, xxiii, 220.
- Manchester Corporation Waterworks Life Annuities, xxiv, 374.
- Royal Charter of Incorporation, Institute of Actuaries, xxv, 1.
- List of New Publications in 1885, xxv, 368.
- South Australian Life Assurance Companies' Act, 1882, xxvi, 24.
- Payment to Trustees, xxvi, 133.
- Position of the Profession under the Charter, xxvi, 228.
- Library of the Institute, xxvi, 248.
- Assignment of Policies, Appointment of Public Trustee, xxvi, 349.
- On the word "Actuary", xxvi, 388.
- Progress of Life Assurance throughout the World, xxvi, 426.
- Friendly Societies, under Section 30 of "The Friendly Societies' Act, 1875", xxvii, 411.
- Assignment of Policies in the Colonies and United States, xxvii, 420.
- Liability of Life Assurance Companies to Income Tax, xxviii, 99, xxx, 318.
- Revised Rules for Institute Examinations, xxviii, 395.
- Statistics of Insanity in Scotland, xxviii, 425.

EDITORIAL REMARKS *continued.*

- English Life Tables, Nos. III and IV, xxix, 28.
- Practice of Life Offices in regard to Assurances on Female Lives, xxix, 75.
- Foundation of the Institute of Actuaries, xxx, 343.
- Calculation of Contingent Assurance Premiums, when Makeham's Law holds, xxxix, 372.

See also C. Jellicoe, Dr. T. B. Sprague, G. H. Ryan, G. King, T. G. Ackland. (Editorial Remarks).

EDMONDS (T. R.). On the Law of Increase of the Population of England during the last 100 years, ii, 57.

- On the Laws of Mortality and Sickness of the Labouring Classes of England, v, 127. Reference, S. Brown, xi, 348.
- On the discovery of the Law of Human Mortality, and on the antecedent partial discoveries of Dr. Price and B. Gompertz, ix, 170. Reference, A. De Morgan, ix, 214.
- On the Law of Human Mortality and on B. Gompertz's new exposition of his Law of Mortality, ix, 327. Reference, T. B. Sprague, x, 32.
- On the value of B. Gompertz's Formula for the number living in terms of the Mortality according to age, compared with the value of a similar Formula published in 1832, x, 104. *See also* A. De Morgan, B. Gompertz, Dr. T. B. Sprague.
- Notices of his Theory, S. Brown, i, 26; Dr. W. Farr, ix, 129.
- On B. Gompertz's Law of Human Mortality and Mr. Edmonds's claims to its independent discovery and extension, T. B. Sprague, ix, 288.
- Reference to his duration of life in the English Peerage, A. H. Bailey and A. Day, ix, 306.
- On the Equitable Mortality Table. Reference, W. Spens, x, 67.

EDWARDS (H. H.). Interpolation by Finite Differences. (Two Independent Variables), xl, 289.**EFFECTIVE RATE OF INTEREST** yielded by Assurance Funds (G. F. Hardy's Formula $\frac{21}{A-B-1}$). A. G. Mackenzie, xxix, 190.**ELDERTON (W. P.).** Temporary Assurances, xxxvii, 501.

- On an alternative type of Formula for Approximate Summation, xl, 116.
- On a form of Spurious Selection which may arise when Mortality Tables are Amalgamated, xl, 221. Additional Remarks on the Discussion, xl, 309.
- Review:—

— "On fitting Curves to a series of measurements or observations", by Dr. F. P. Cantelli, xxxix, 376.

ELECTRICAL TABULATING MACHINE (Hollerith). Description, G. H. Ryan, xxxvi, 319.**"ELEMENTS OF STATISTICS"** (A. L. Bowley). *Review* by J. Holliday, xxxvi, 197.**EMIGRANTS** to Australia, On the rate of Mortality among, J. J. McLauchlan, xviii, 381.**EMIGRATION**, From the United Kingdom (1815-1884), A. F. BurrIDGE, xxv, 94. Returns, Victoria, 1870-1889, A. F. BurrIDGE, xxiii, 316.

And Immigration. Canadian, M. D. Grant, xl, 128.

EMMINGHAUS (Dr. A.). Condition and Progress of German Life Insurance Companies in 1873 (translated and abridged by D. A. Bumsted), xix, 42.

Ditto, in 1881, D. A. Bumsted, xxiv, 55.

— Mortality Experience of the Gotha Company, J. Chatham, xxix, 122.

EMPLOYEES IN ASSURANCE OFFICES, Superannuation of, H. W. Porter, v, 72; "H. A.", ix, 366; Insurance Scheme for, (Editorial), xxii, 365.**EMPLOYERS' LIABILITY ACT, 1880**, Reference, J. Nicoll, xxxvi, 424.

See also Legislation and Workmen's Compensation.

ENDORSEMENT ON POLICIES, Forms of, used in the practice of Life Assurance, C. Jellicoe, viii, 21.**ENDOWMENT ASSURANCES.**

- Demonstration of the formula for, C. Jellicoe, i, 332; T. B. Sprague, viii, 111.

Analogy to Whole-Life Policy, P. Gray, ii, 95.

ENDOWMENT ASSURANCES -continued.

- On a method of estimating the Increase of Rate to meet Deterioration put upon, H. A. Smith, x, 120.
- On the facility with which the ordinary Annuity and Assurance Values are derived from the value of the Endowment, S. L. Lunnely, xi, 51.
- Annual and Single Premiums, HM 3 per-cent, H. A. Smith, xxii, 143.
- Extra Premiums on, F. W. White and W. J. H. Whittall, xxiv, 398.
- On Joint Lives, D. Walker, xxv, 136.
- Conversion of Whole-Life Policies into Endowment Assurances and making Endowment Assurance payable at an earlier age, H. W. Manly, xxvii, 362.
- Bonuses on, A. W. Sunderland, xxviii, 257; G. King, xxviii, 275, G. J. Lidstone, xxxii, 73.
- Life Office practice in regard to, H. C. Thiselton, xxxi, 50.
- Annual and Single Premiums, HM $2\frac{1}{2}$ per-cent, J. McDonald, xxxii, 418.
- On Two Joint Lives, Approximate Calculation of Net Premiums for, G. J. Lidstone, xxxiii, 354.
- — Annual Premiums at HM 3 per-cent, Text Book Graduation, A. S. Hume and W. Stott, xxxvi, 393-395.
- On the Tabulation of, T. G. Ackland, xxxiii, 366.
- On Extra Risks in relation to Double Endowments, A. Levine, xxxiv, 514.
- Tables of the Values of Continuous Temporary Annuities for Valuing in Groups. OM Mortality $2\frac{1}{2}$ and 3 per-cent, S. G. Dunn and B. May, xxxviii, 51-60. OM $2\frac{3}{4}$ per-cent, A. Levine, xl, 369.

ENDOWMENT ASSURANCE BUSINESS, Origin and Growth of, H. A. Thomson, xxxiv, 2.

ENDOWMENT ASSURANCE POLICIES, On Formulas for the value of, D. J. A. Samot, xx, 344.

- The Application of the Arithmometer to the Construction of Tables for Values of, D. Carment, xxii, 368.
- Construction of Tables of their Values, D. Carment, xxiii, 232.
- Valuation of, G. King, xxv, 156; J. Chatham, xxxii, 415; F. W. Fulford, xxxv, 221.
- Tables of the Values of, constructed on the Arithmometer, A. D. Besant, xxxi, 366.
- On their Valuation in Groups, F. Schooling, xxxii, 312; H. A. Thomson, xxxiv, I, xxxviii, 34; G. J. Lidstone, xxxiv, 61, 510, xxxviii, 1, 47; G. F. Hardy, xxxiv, 87; J. Altenburger, xxxiv, 150, xxxv, 332; G. King, xxxviii, 38; T. G. Ackland, xxxviii, 40, 61; R. P. Hardy, xxxviii, 44.

ENFRANCHISEMENT OF COPYHOLDS, E. Smyth, xxi, 381; G. S. Mathews, xxviii, 1.

"ENFRANCHISEMENT OF COPYHOLDS, LIFE-LEASEHOLDS AND CHURCH PROPERTY" (A. Scratchley). *Review*, v, 257.

ENFRANCHISEMENT OF LEASEHOLDS, T. Kyd, xxx, 345; A. W. Tarn, xxx, 405.

ENGLAND AND WALES.

- On the Law of Increase of the Population during the last 100 years, T. R. Edmonds, ii, 57.
- Position of Friendly Societies in, S. Brown, xi, 333.
- Population Tables, A. F. Burridge, xxv, 96.
- Marriage Rate per thousand of Mean Population, A. F. Burridge, xxv, 105.
- Fluctuations in the rate of Mortality in, A. F. Burridge, xxix, 459.
- Enfranchisement of Leaseholds, Taxation of Ground Rents, Chief Rents, and other Kindred Charges on Land in, T. Kyd, xxx, 345; A. W. Tarn, xxx, 405.

See also Censuses and Census Returns.

ENGLISH DEATH RATE, Decline in, N. A. Humphreys, xxvii, 486.

ENGLISH LIFE TABLE, H. W. Porter, ix, 277, x, 31; A. H. Bailey, ix, 314, 357; H. W. Manly, xiv, 251. *See also Healthy English Table.*

— (No. 1 Males). * Correction in value of the annuity age 35, 4 per-cent, by "T. M.", xv, 76.

ENGLISH LIFE TABLE, No. III. *Review*, xii, 109.

— Values of the Continuous Annuities, Premiums and Assurances at 3, $3\frac{1}{2}$, $3\frac{3}{4}$, and 4 per-cent, with their Logarithms, C. H. F. Rea, xxxiv, 122.

— Nos. III and IV, based respectively upon the Mortality in 1838-54 and 1871-80, (Editorial), xxix, 28. New English Life Table, N. A. Humphreys, xxvii, 186. Reference, G. King, xxviii, 216.

See also Mortality Tables.

ENGLISH WIDOWS' FUND. Letter on the case, Black *r*, viii, 357.

ENTAIL. Notes on the Pecuniary Interests of Heirs of Entail, with Calculations and Tables (W. T. Thomson). *Review*, i, 103*.

ENTAILED ESTATES IN SCOTLAND. On a Problem occurring in connection with, T. B. Sprague, xix, 38.

EPIDEMIOLOGICAL SOCIETY. On the, Dr. B. G. Babington, i, 240; Editorial Note, i, 360; Dr. J. O. McWilliam, ii, 54.

EQUATED TIME OF PAYMENT. On the, A. Levine, xxxiii, 539.

EQUITABLE SOCIETY. Report in 1761 of the Attorney and Solicitor-General on the Petition for a Charter for the, i, 89*. Remarks by F. Hendriks on this Report, iv, 309.

— Mortality Experience. S. Brown, ii, 262; W. Spens, x, 66; J. A. Higham, xx, 1; J. Chatham, xxix, 113.

— Letters as to C. Babbage's remarks upon it, F. Baily and W. Morgan, x, 309.

EQUITABLE MORTGAGES OF LIFE POLICIES. Payment under, A. R. Barrand, xxxiii, 211.

ERRATA.

— P. Hardy's Letter on "Contingencies", ii, 298.

— C. W. Merrifield's Actuarial Note on Interest, iii (*inset*).

— D. Chisholm's Letter on Interest, iii (*inset*).

— Review of W. T. Thomson's Actuarial Tables, iii (*inset*).

— C. Jellicoe's Paper (Relation between Amount Assured and Sum Reserved), v, at 1.

— T. Carr's Letter (Reversionary Annuities), vii, at 1.

— P. Gray's Paper (Adjustment of Mortality Tables), vii, at 1.

— S. L. Laundry's Letter (Methods of Computation), viii, at 1.

— Hillman's Tables of Policy Values, ix, 240.

— W. Spens' Paper (Scottish Amicable Experience), x, at 1.

— S. L. Laundry's Letter (Scales of Premiums), x, at 1.

— P. Gray's Paper (On Gompertz's Law), x, 235.

— H. A. Smith's Letter on Assurance of Invalid Lives, xi, 180.

— Dr. W. Farr's Paper (Construction of Life Tables), xii, at 1.

— P. Gray's Paper (Gompertz's Method of Adjusting Mortality Tables), xiii, at 1.

— A. De Morgan's Paper (Life Contingencies), xiii, 149.

— English Life Table, No. I, xv, 76.

— T. B. Sprague's Paper (Apportionable Annuities), xv, 244.

— W. S. B. Woolhouse's Paper (Theory of Annuities and Assurances), xv, 311, xviii, 151.

— H. W. Manly's Paper (Adjustment of Mortality Tables), xv, 388.

— W. Lazarus's Paper (Theory of Probabilities), xv, 455.

— Dr. T. N. Thiele's Paper (Expression for the Rate of Mortality), xvi, 464.

— E. Sang's Seven-figure Logarithms, xvii, 112, 298.

— Milne's Treatise on Annuities and Assurances, H. Hoskins, xvii, 192.

— In *Journal*, xvii, 228, xxviii, 492, xxxix, 336.

— W. M. Makeham's Paper (On the Integral of Gompertz's Function), xvii, 446.

— T. B. Sprague's Paper (Reversionary Annuities), xviii, 76.

— T. B. Sprague's Paper (Value of Annuities), xviii, 76.

— R. P. Hardy's Valuation Tables, xviii, 376.

— Institute Life Tables, xix, 228.

— G. F. Hardy's Remarks on J. A. Higham's Paper (Adjustment of Mortality Tables), xxiii, 464.

— Text-Book, Part I, xxv, 63.

— Text-Book, Part II, xxvii, 120, 159, xxviii, 160, xxix, 80.

— Names of Examiners (April, 1885), xxv, 368; (October, 1888), xxvii, 512.

— Erskine Scott's Logarithms, xxviii, 249, 332.

ERRATA—*continued.*

- W. M. Makeham, Theory of Errors, xxviii, 416.
- Hodgson's Clergy Mortality Tables, xxviii, 489.
- Board of Trade Returns (1887-8), xxviii, 492.
- E. L. Stabler, Makeham's Theory of Inverse Probabilities, xxx, 580.
- A. W. Tarn's Prize Essay (Enfranchisement of Leaseholds), xxx, 580.
- List of Members of the Institute (1893), xxxi, 160.
- System and Tables of Life Insurance, Levi W. Meech, xxxii, 71.
- Names of the Members of the Permanent Committee of International Actuarial Congresses, xxxii, 392.
- F. E. Colenso's Paper (Application of Makeham's Law), xxxii, 186.
- W. O. Nash's *Review* of Lectures on "The Companies Acts" (xxix, 281, should be xxix, 481), xxxv, 52.
- J. Burn's Paper, (Fall in the Rate of Interest), xxxvi, 208.
- A. W. Tarn's Paper (Life Assurance in Greater Britain), xxxvi, 208.
- H. W. Mauly and E. C. Thomas's Paper (Staff Pension Funds), xxxvii, 244.
- British Offices' Life Tables (1893), xxxviii, 98.
- Text-Book, Part I, New Edition), xxxviii, 99.
- And Misprints. Indexes to *Journal*, vols. i-xx and xxi-xxx, xxxvii, 514.

ERRORS (Theory of). See **Theory of Errors**.

"**ESSAY ON LIFE ASSURANCE**" (E. Sang). *Review*, iii, 260.

— (H. W. Porter). *Review*, ix, 58.

ESSEX PROVIDENT OFFICE. Mortality Experience, G. F. Hardy, xxvii, 285.

ESTATE DUTY, Policies Issued for Payment of, A. R. Barrand, xxxiii, 231.

ESTATE DUTY DEPARTMENT, Deputation Appointed to Interview the Officials of the, and subsequent Correspondence, xxxvi, 81-84.

ESTIMATES OF LIABILITIES OF LIFE OFFICES. See **Valuation of Life Policies**.

EULER (L.). Historical Notice of him, F. Hendriks, i, 19.

EUROPEANS, Mortality and Marriage Rate among, in India, S. Brown, xi, 1, xii, 276.

— Mortality among, in India, T. B. Sprague, xix, 295.

— Mortality among, in Tropical Africa, T. B. Sprague, xxv, 437.

— Mortality among, in Certain Unhealthy Districts, Dr. T. G. Lyon, xxix, 541.

See also **Mortality** (2).

EVANS (W.). On the Value of a Reversionary Annuity Payable Oftener than Once a Year (being a Paper read before the Actuarial Society of Edinburgh), xix, 12.

EVE (F.). On the Heredity and Transmission of Consumption, and of Tuberculosis or Scrofula, xxvii, 156.

EVENTS AND WANTS. Presidential Address (November, 1900), C. D. Higham, xxxv, 425.

EVERETT (J. D.). On a New Interpolation Formula, xxxv, 452.

EVOLUTION, The Theory of, applied to the system of Life Assurance and, incidentally, to Insurance generally, T. E. Young, xxxii, 247.

EVOLUTION IN MAN. Data for the Problem of, V. On the Correlation between Duration of Life and the number of Offspring, Miss M. Beeton, G. U. Yule and Karl Pearson, xxxv, 458.

EXACT DURATION METHOD, of Tabulating the facts in a Mortality Investigation, T. B. Sprague, xxxi, 213.

— Of deducing Rates of Mortality and Withdrawal, T. G. Ackland, xxxiii, 71, 147.

EXAMINATIONS. See **Institute of Actuaries**.

EXISTING, in Mortality Experience, J. Chatham, xxix, 104; R. R. Tilt, xxxii, 1.

— Age of, in Institute Method of Tabulating Mortality Experience, T. B. Sprague, xxxi, 218.

EXPECTANCIES UNDER WILLS, Mortgages of, J. R. Hart, xxxix, 252.

EXPECTATION OF LIFE. Formulas for, Carlisle Table, C. A. M. Willich, vii, 181; Northampton, Government Males and Females, and Carlisle, W. D. Biden, vii, 352; English (Males), C. A. M. Willich, viii, 139.

— Demonstration that a Life Annuity is less than an Annuity-Certain for the, T. B. Sprague, x, 52, xiii, 381.

EXPECTATION OF LIFE *continued.*

Remarks on the phrase as compared with average (or mean) duration of life, A. De Morgan, xii, 33; T. B. Sprague, xiii, 381; "Average" duration of life preferable to "Mean", xv, 191.

Remarks on this quantity and on the *vie probable*, T. B. Sprague, xiii, 27; W. Sutton, xvi, 151-2.

"Eagle" Unsound Lives and Seventeen Offices' Experience, G. Humphreys, xviii, 186.

In India, G. F. Hardy, xxv, 223.

West Indies, G. F. Hardy and H. J. Rothery, xxvii, 178.

Farr's English Life Table, No. III. (1838-54); New English Life Table (1876-80), N. A. Humphreys, xxvii, 501.

T. J. Searle, xxviii, 193.

Meaning of the expression, H. W. Manly, xxxv, 98.

Data for the Problem of Evolution in Man. A First Study of the Inheritance of Longevity and the Selective Death Rate in Man, Miss M. Beeton and Karl Pearson, xxxv, 112.

See also **Duration of Life.**

EXPECTED CLAIMS, G. M. Low, xviii, 195; G. H. Ryan, xxvi, 219; H. J. Rothery, xxvi, 270; J. Chatham, xxxii, 397.

EXPECTED DEATHS.

True Method of computing, R. P. Hardy, xxiii, 12.

In Cases of Extra Risks, G. H. Ryan, xxiv, 318.

Approximate Calculation of, by Woolhouse's Method, G. H. Ryan, xxvii, 151.

EXPECTED DEATHS and Expected Claims, G. M. Low, xviii, 195; G. H. Ryan, xxvi, 219; J. Chatham, xxxii, 397.

EXPECTED DEATH STRAIN. *See* **Death Strain.**

EXPENDITURE, In Life Assurance Offices, H. R. Harding, xxviii, 136; Table illustrating same, T. Y. Strachan, xxviii, 111; T. B. Sprague, xxviii, 149; W. Sutton, xxviii, 175.

Modes of Tabulating, in America, G. H. Ryan, xxxii, 46.

In Life Offices throughout the Colonies, A. W. Tarn, xxxiv, 533.

EXPENSES OF LIFE OFFICES. On the Interpretation of the Statements required by the "Life Assurance Companies Act, 1870", with special reference to the question of, D. Deuchar, xviii, 323. Reference, J. M. McCandlish, xx, 25.

Report to Board of Trade by W. R. Malcolm and R. G. C. Hamilton, xviii, 390.

How they affect the Insured, A. H. Bailey, xix, 1.

On the Measure of, J. R. Macfadyen, xix, 153.

Extracts from T. B. Sprague's letters in the *Insurance Record*, xix, 167.

Extracts from T. B. Sprague's opinion on questions submitted to three London Actuaries by the Australian Mutual Provident Society, xix, 170.

Letter commenting on J. R. Macfadyen's paper, on the measure of, D. Deuchar, xix, 303.

On the proper method of measuring (being reply to J. R. Macfadyen), T. B. Sprague, xix, 305. Further communications by J. R. Macfadyen, xix, 415, and T. B. Sprague, xix, 417.

And Selection as affecting Pure Premium Method of Valuation, J. Sorley, xxi, 192.

Extract from the *Review*, xxiii, 360.

In Australasia, D. Carmichael, xxx, 226.

H. W. Manly, xxxv, 106.

Deductions to be made for Expenses in calculating the Surrender-Value of a Policy, F. W. Fulford, xxxv, 205.

Ratio of Expenses to Premium Income, H. Moir, xxxvi, 15.

Application of Valuation Factors Calculated with allowance for Lapse. (Whole-Life Industrial Assurances), T. G. Ackland and J. Bacon, xxxviii, 567.

EXPERIENCE. The Logic of an Unfortunate Experience (extracted from the *Insurance Monitor* of New York), xxiii, 222.

EXPERIENCE OF CLERKS' ASSOCIATIONS. *See* **T. G. Ackland and Mortality.**

EXPERIENCE OF OFFICES. *See* **Mortality (1).**

"EXPERIENCE OF THE ANCIENT ORDER OF FORESTERS" (F. G. P. Neison, Jr.). Reference, G. F. Hardy, xxvii, 288.

"EXPERIENCE" TABLE. See *Seventeen Offices*.

EXPOSED TO RISK, Formulas for, W. T. Gray, xxv, 372; G. H. Ryan, xxvi, 256; G. F. Hardy and H. J. Rothery, xxvii, 165; G. King, xxvii, 218; J. Chatham, xxix, 81; P. L. Newman, xxix, 476; W. J. H. Whittall, xxxi, 161; T. G. Ackland, xxxiii, 186, 362.

— Formula for Scottish Experience, J. Meikle, xiii, 267. Reference, W. J. H. Whittall, xxxi, 175.

— As affecting Average Rates of Mortality, W. T. Gray, xxv, 369.

— Institute Method of computing, G. H. Ryan, xxv, 383, xxvi, 255; G. King, xxvii, 218; J. Chatham, xxix, 100; W. J. H. Whittall, xxxi, 175.

— T. Galloway's Method of deducing, G. H. Ryan, xxvi, 256; W. J. H. Whittall, xxxi, 168.

— J. Meikle's Method of deducing, G. H. Ryan, xxvi, 256; J. Chatham, xxix, 91.

— Method of deducing, in the Experience of the Barbados Mutual Life Office, G. F. Hardy and H. J. Rothery, xxvii, 163; W. J. H. Whittall, xxxi, 182.

— On a New Formula for deducing, from the Records of a Life Assurance Company, G. King, xxvii, 218; W. J. H. Whittall, xxxi, 184.

— Method of deducing, employed by the Washington Life Insurance Company, G. H. Ryan, xxviii, 224.

— J. J. Downes's Method employed in deducing the Experience of the Economic Life Office, W. J. H. Whittall, xxxi, 171.

— Method of deducing, in the experience of the Connecticut Mutual Life Office, W. J. H. Whittall, xxxi, 182.

— Mode of tabulating the facts for the purpose of ascertaining the Numbers Exposed to Risk, J. Meikle, xxxi, 229.

— On the Treatment of Incomplete Years of Exposure in a Mortality Experience derived from Records of Assured Lives, G. J. Lidstone, xxxi, 304.

— Methods of deducing, T. G. Ackland, xxxiii, 68.

— Method of computing, among Female Nominees of General Annuity Trust Fund, G. King, xxxiii, 263.

— On Method of finding $\log e$ from, H. P. Calderon, xxxv, 162.

See also *Mortality*.

EXTRA MORTALITY, F. W. White and W. J. H. Whittall, xxiv, 385. Reference, (Editorial), xxiv, 443.

EXTRA PREMIUMS. Military Officers in Bengal, C. Jellicoe, i, 166.

— Charged by the Scottish Offices in 1851 for Assurance of Lives of Persons going Abroad, C. Jellicoe, ii, 166.

— Charged for War Risk, according to a return of the Board of Health, iv, 264.

— Should not the Additions to a Policy, as well as the Sum Assured, be charged with? C. Jellicoe, vi, 104.

— For Climate, &c. On the Data collected by the Council of the Institute, with a view to determine the Rates of Premium for the Assurance of lives of persons residing in foreign climates or engaged in pursuits attended with extra risk, C. Jellicoe, vii, 131.

— For foreign travel and residence, R. Campbell, ix, 167; A. H. Bailey and A. Day, ix, 317; A. H. Bailey, xiv, 104, xv, 77; J. Meikle, xix, 268.

— For damaged Health, &c. On a method of estimating the increase of rate caused by extra premiums, for endowment assurances, H. A. Smith, x, 120; J. R. Macfadyen, xvii, 77. On the means of dispensing with them, W. M. Makeham, xvii, 153.

— On a plan for making them conditional, S. Younger, x, 268; Sir E. W. Brabrook, x, 349; H. A. Smith, x, 352; P. Gray, x, 354.

— On the Adjustment of them in reference to the risk. W. M. Makeham, xiv, 159, 242. Reference, J. R. Macfadyen, xvii, 87.

— The Effect of various methods employed in charging, J. R. Macfadyen, xvii, 77.

— For Females, charged by the Scottish Offices, xix, 209.

EXTRA PREMIUMS—*continued.*

- For Jamaica, 13s.; Trinidad, 33s. 3d.; other West Indian Islands, 20s. 8d.; Guiana, 36s. 4d.; General West Indies, 20s., W. Stott, xxi, 169.
- Comparison of, on Endowment Assurances, required by Hypothetical Tables, F. W. White and W. J. H. Whittall, xxiv, 398.
- Chargeable in respect of Two-Life Assurances, G. H. Ryan, xxiv, 305.
- Proposal for making Temporary Deductions from the sum assured in lieu of Extra Premium, A. W. Sunderland, xxix, 419; H. J. Rothery, xxix, 432; F. W. Frankland, xxix, 435; G. H. Ryan, xxix, 437; G. F. Hardy, xxxii, 153.
- For those engaged in the Liquor Trade. Based on an Investigation made by the Associated Scottish Life Offices, xxxiii, 260.
- For Professional Military and Naval Lives, A. H. Smee and T. G. Ackland, xxxiv, 358.
- On Double Endowment Assurances, A. Levine, xxxiv, 514.

*See also Mortality and Premiums.***EXTRA RISK.** Considered in relation to a Hypothetical Table of Mortality, G. H. Ryan, xxiv, 19.

- Arising from a Consumptive Family History when the life proposed for Assurance is physically sound and healthy, H. W. Mauly, xxx, 97.
- Among Persons engaged in the Sale of Intoxicating Liquors. Reports of the Associated Scottish Life Offices, xxxiii, 245, 252. *See also Innkeepers, Liquor Trade, and Publicans.*
- In the British Navy and Army, J. J. McLauchlan, xxxiv, 251.
- In relation to Double Endowment Assurances, A. Levine, xxxiv, 514.

*See also Invalid Lives and Mortality (3).***PACKLER (D. P.).** Regarding the Mortality Investigation instituted by the Actuarial Society of America and now in Progress, xxxvii, 1.

- Obituary Notice of S. Homans, xxxiv, 144.
- "The Effect of a Decreasing Rate of Interest on Annuities and Policy Reserves." *Review* by G. H. Ryan, xxxii, 272.

FACTORIAL NOTATION of Boole's "Finite Differences", R. Wilding, xxii, 60.**FACTORS.** *See S. L. Laundy and C. W. Merrifield.*

- FACTORS (Constant).** Their use in transforming Annuities (certain) and Annuity-Values into their equivalents when payable in fractional intervals of a year, D. J. McG. McKenzie, xxiii, 162.
- Their application to Life Annuity-Values and Assurance Premiums, D. J. McG. McKenzie, xxiii, 187.
- For Transforming Yearly Annuities (certain) into Momently Annuities, D. J. McG. McKenzie, xxiii, 417.
- For Life Annuities, J. Naylor, xxiii, 433.

FACTOR TABLES. *See J. W. L. Glaisher*, xxii, 346.**FAMILY ANNUITIES**, G. King, xxx, 291.**FARR (Dr. W.).** Letter to the Registrar-General (12th Annual Report), Extracts, iv, 118, 133. *Review* of this letter, iv, 266. Reference, M. N. Adler, xii, 5, 272.

- The Great Powers (with notice of their military strength and national debts). Supplement to Report on Statistical Congress at Paris in 1855, vi, 147.
- On the Construction of Life Tables, illustrated by a new Life Table of the Healthy Districts of England (extracted from the Philosophical Transactions), ix, 121, 188; Errata, xii, at 1. References, W. T. Gray, xxiv, 261; C. D. Higham, xxxv, 429. Columns D, N and S for this table at 3 per-cent, W. Davis, x, 59.
- On J. Henry's paper on the Relation of the Carlisle to other Tables of Mortality, xi, 109.
- Remarks on Dr. Halley's Breslau Mortality Table, xviii, 264.
- Table showing the duration of illness in the case of the Deaths of 100 Persons of the age of 20 and upwards, registered in a London district, xix, 413. Reference, G. King, xix, 411.
- English Life Table (1841), Method of Construction. Reference, S. Brown, i, 32.

FARR (Dr. W.) *continued.*

- "Report on the Mortality from Cholera in England in 1818-19", *Review*, iii, 181.
- His use of the term "Annuity" to denote "Annuity-due", and his change of the *N* column. H. Ivory, iv, 294; A. De Morgan, x, 391; T. B. Sprague, xiii, 21*n*; J. Chisholm, xiv, 208.
- "English Life Table", *Review*, xii, 109.
- "Vital Statistics" (*Notice of Publication*), xxv, 368.
- "Rates of Net Annual Premium to cover the Risk of Fatal Accident according to Age and Sex." Reference, J. Nicoll, xxxvi, 481.

FARR (Dr. W.) and HAMMACK (—). Abstract of Census (1861), x, 1.

FARREN (E. J.). On Indirect Methods of Acquiring Knowledge: The Method of History; The First Table of Mortality, i, 40.

- Mental Statistics, or Edinburgh in 1850, i, 113.
- Letter proposing Three Life Contingency Problems: 1. To Calculate on the Columnar System the Value of an Annuity Payable by *n* instalments in the year; 2. To show that the Value of a Policy has always a certain Relation to the Compound Interest of the Sum Assured considered as a Loan; 3. To show that a Definite Integral between the limits 0 and 1 necessarily represents an Average Value, i, 92³. Letter containing Solutions of the Problems, i, 355.
- On the Reliability of Data when Tested by the Conclusions to which they lead, iii, 204. Reference, W. Spens, iv, 6, 139; Author, iv, 66, 141.
- On the Period intervening between the Date of Death and Payment of the Sum Assured, iii, 234. References, H. Filipowski, iii, 338; D. Chisholm, iv, 71.
- On the Form of the Number whose Logarithm is Equal to Itself, iii, 323.
- On the Proper Expression for the Amount of £1 with the Fractional Part of a Year's Interest, iii, 335. *See also* Fractional intervals of a Year.
- On the Improvement of Life Contingency Calculations, v, 185, viii, 121. References, C. Jellicoe, vi, 105; S. Younger, vii, 71.
- On the Application of the Differential and Integral Calculus to Interest Questions. (Communicating remarks by A. De Morgan), v, 254.
- On the Valuation of Government Securities, v, 310.
- On J. J. Sylvester's Mathematical Lectures, viii, 237.
- "Life Contingency Tables, Part I. The Chances of Premature Death and the Value of Selection among Assured Lives", *Review* (extracted from the *Philosophical Magazine*), iii, 181.
- References to his Treatise on the Chances of Premature Death among Select Lives, W. Spens, iv, 5, 139; Replies (Author, iv, 66, 141; C. Jellicoe, iv, 205).

FARREN (G.). On his "Observations on the Mortality among the Peerage", A. H. Bailey and A. Day, ix, 305.

FATAL ACCIDENTS in various Occupations, W. J. H. Whittall, xxiii, 188.

FATAL ACCIDENTS INQUIRY (SCOTLAND) ACT, 1895, Reference, J. Nicoll, xxxvi, 527.

FAULKS (J. E.). Some Notes on Sinking Fund Assurances, xxxiv, 562.

- Stamps on Debentures, xxxv, 154.
- The Income Tax as affecting Life Offices, with Special Reference to some recent Decisions, xxxviii, 297.
- Reviews:—
- — "The Law of Mortgage." A Course of Lectures, by W. G. Hayter, xxxvi, 287.
- — "The Law of Life Assurance" (C. J. Bunyon). Fourth Edition by J. V. Vesey Fitzgerald, xxxix, 120.

FELKIN (Dr. R. W.). On the Geographical Distribution of Tropical Diseases in Africa. *Review* by A. E. Sprague, xxxii, 65.

FEMALE ANNUITANTS. The Rates of Mortality amongst the Female Nominees of the General Annuity Trust Fund, G. King, xxxiii, 262.

FEMALE GOVERNMENT ANNUITANTS. A. J. Finlaison's Observations on the Mortality of, T. B. Sprague, xxvi, 77.

- Employment of A. J. Finlaison's Analysed Table (1881) for Counter-Life in Survivorship Assurances, A. W. Sunderland, xxvii, 82; H. E. Nightingale, xxx, 27.

FEMALE LIVES.

- Contrasted with Males, C. Walford, xix, 174.
- Practice as to the Insurance of them. Eagle and United Empire, ix, 359, xix, 181; Equitable Society, xix, 176; as described by C. Ansell, xix, 186; British Empire Mutual, xix, 187; Yorkshire, xix, 192.
- Mortality Experience, Eagle, iv, 199, xix, 187; Gotha, vi, 2, xix, 189; Peerage, ix, 312; "Seventeen Offices", xix, 183; Scottish Equitable, xix, 197; T. B. Sprague, xxxi, 205, 226; New York Life, xix, 199; Provident Life and Trust Company of Philadelphia, T. B. Sprague, xxvi, 318; Four French Companies and 23 German Companies, G. H. Ryan, xxix, 71; Nominees of General Annuity Trust Fund, G. King, xxxiii, 262. *See also* H. W. Porter, ix, 277; A. H. Bailey, ix, 357.
- Report of Committee of the Associated Scottish Life Offices, as to Extra Premiums for the Assurance of, xix, 209.
- Value of a policy on a female life subjected to extra premium, J. Sorley, xx, 312.
- Practice of Life Offices (Editorial), xxix, 75.

See also **Males and Females.**

FILIPOWSKI (H.). On the proper expression for the value of £1 payable at the instant of death, iii, 338.

— On the Interest Question, iv, 243, 253.

FINAL AGE METHOD of Tabulating the facts in a Mortality Investigation, T. B. Sprague, xxxi, 215.

FINAL SERIES as employed by American Offices. References, G. H. Ryan, xxiv, 288, xxxii, 44; T. G. Ackland, xxiv, 289; W. T. Gray, xxiv, 292; T. B. Sprague, xxiv, 293; J. Chatham, xxix, 120, 183; R. R. Tilt, xxxii, 6, 9, 10, 14, 25; H. W. Manly, xxxii, 23; Levi W. Meech, xxxii, 72.

"**FINANCE ACT, 1894**", Valuation of Reversions, etc., for the purposes of, xxxvi, 84. *See also* **Legislation.**

FINANCIAL ASPECTS OF DEBENTURES. A. R. Barrand, xxxiv, 449.

FINES, Payable on the Renewal of Copyhold Leases. On the Formulæ for expressing the Value of all the, E. Ryley, iv, 367. *See also* P. Gray, ii, 278; T. Weddle, xiii, 224.

— For Deferred Assurances. T. B. Sprague xxii, 433, xxvii, 121; A. H. Bailey, xxvii, 116; H. J. Rothery, xxviii, 483; H. E. Nightingale, xxx, 35; G. King, xxx, 77.

FINITE DIFFERENCES, General method of obtaining the Finite Integral of any Rational Algebraic Function of x ; or summing any series of which such a function is the general term, W. Orchard, i, 9*.

— On the Calculus of, and its application to problems in the Doctrine of Compound Interest and Annuities-Certain, W. C. Otter, vii, 333, viii, 19.

— Demonstration of a Formula used by G. W. Berridge, T. Carr, xiv, 478.

— Interpolation by Central Differences, J. Spencer, xxxiii, 349.

— (Boole's). On an error in Factorial Notation in, R. Wilding, xxii, 60.

— Treatise on (*Notice of Publication*), A. W. Sunderland, xxv, 368.

See also **Differences and Interpolation.**

FINLAISON (A. G.). Report on Sickness and Mortality in Friendly Societies, *Revue*, iv, 269. Observations by H. Tompkins, v, 9; T. R. Edmonds, v, 127; J. A. Higham, vii, 112; S. Brown, xi, 345; W. M. Makeham, xiii, 343, xvi, 412.

— Remarks on his Report and Observations on the Mortality of the Government Life Annuitants (1860), H. W. Porter, ix, 277, x, 31; A. H. Bailey, ix, 314, 357; W. M. Makeham, xiii, 340; C. Walford, xix, 192.

— Report on the Mortality among the Members of Friendly Societies (1853). References, A. J. Finlaison, xxxi, 197; A. W. Watson, xxxv, 285.

FINLAISON (A. J.), C.B. On the Rate of Mortality found to prevail among Residents in India, being Subscribers and the Male and Female Nominees of Subscribers to the Uncovenanted Service Family Pension Fund between the years 1837-1872, xviii, 153. Annuity and Assurance Tables deduced from this Experience by T. H. Cooke, xix, 223.

FINLAISON (A. J.), C.B. *continued.*

- Report on the Manchester Corporation Water Works Life Annuities, xxiv, 371. Reference, J. Chatham, xxxii, 101.
- Observations on the Mortality of the Female Government Annuitants, T. B. Sprague, xxvi, 77.
- Method of Graduation, J. Chatham, xxiv, 109; T. B. Sprague, xxvi, 77.
- Government Female Annuitants' Analysed Table, 1881, Employment of, for Counter-Life in Survivorship Assurances, A. W. Sunderland, xxvii, 82; H. E. Nightingale, xxx, 27.
- Reserves for Annuities according to a Model Office, G. H. Ryan, xxx, 191.
- Government Annuitants' Experience, 1883, W. J. H. Whittall, xxxi, 179.
- **Presidential Addresses** (Nov. 1891), xxxi, 113; (Nov. 1895), xxxii, 233.
- Obituary Notice of, xxxv, 490.

FINLAISON (J.). Notices of his Mortality Tables of the Government Annuitants, Sir J. W. Lubbock, v, 283; H. A. Smith, xiii, 58.

- Method of Graduation, A. J. Finlaison, xxi, 49; P. Gray, xxi, 50; W. S. B. Woolhouse, xxi, 50, 57; J. A. Higham, xxiii, 335, xxv, 15; T. G. Ackland, xxiii, 352, xxvi, 117; R. Todhunter, xxxii, 381.
- Male Annuitants' Table, W. M. Makeham, xxviii, 187.
- Notice of his death, ix, 116.
- Memoir of, x, 147.

FINLAY (GILBERT L.). Correspondence with the Treasury on the Operation of the Income Tax Enactment as regards any Abatement on Payment of Single Premiums, iv, 239.**FIRE INSURANCE.** On the Scientific Application of Data to the purpose of deducing Rates of Premium for, C. Walford, xxi, 1.

- A Theory of Statistics, T. Miller, xxii, 103.

FITZGERALD (W.). Extract from his Report (1885) on the Canadian Insurance Act (1886), xxvii, 456.**FIXED TERM ASSURANCES.** *See Sinking Fund Assurances.***FLORENCOURT (C. C. de).** Historical Notice of him, F. Hendriks, i, 19.**FOOT (H.) and MANLY (H. W.).** **On the Valuation of Staff Pension Funds.** Part II. Widows' and Children's Pensions, xxxviii, 101.**FORCE OF DISCOUNT.** Explanation of the term, W. S. B. Woolhouse, xi, 321; Tables of values at various rates of interest, W. S. B. Woolhouse, xv, 125.**FORCE OF MARRIAGE.** T. B. Sprague, xxi, 406; J. Chatham, xxviii, 385.**FORCE OF MORTALITY.**(1.) *Formulas and Tables.*

L. Opperman's formula at young ages $\mu_x = ax^{-1} + b + cx^1$, Dr. T. N. Thiele, xvi, 315.

W. S. B. Woolhouse's approximations $\left(\mu_x = \frac{8l_{x-1} - l_{x+1} - (l_{x-2} - l_{x+2})}{12l_x} \right)$ and $= \frac{7(d_{x-1} + d_x) - (d_{x-2} + d_{x+1})}{12l_x}$, Author, xxi, 64. References, E. L. de Forest, xxii, 231; T. B. Sprague, xxii, 232; G. King, xxiv, 429.

Gompertz's Formula, C. F. McCay, xxii, 24; J. Govan, xxxiv, 147.

Makeham's Formula, C. F. McCay, xxii, 24; G. F. Hardy and H. J. Rothery, xxvii, 179; Author, xxviii, 318; G. H. Ryan, xxx, 3, 7; Its use in approximating to Annuities on Three Lives, G. F. Hardy, xxiii, 275; G. J. Lidstone, xxx, 214.

Construction of Table of μ_x , G. King and G. F. Hardy, xxii, 213.

Constant addition to μ_x involves constant addition to Force of Interest, G. H. Ryan, xxiv, 24; F. W. White and W. J. H. Whittall, xxiv, 388; G. F. Hardy and H. J. Rothery, xxvii, 180.

Constant addition to q_x involves an increasing addition to μ_x , G. H. Ryan, xxiv, 24.

Its relation to q_x ($q_x > < \mu_x$ according as $d_x > < d_{x-1}$), T. B. Sprague, xxiv, 43; G. H. Ryan, xxx, 201.

On the General Expression for, Proof, G. J. Lidstone, xxxii, 390.

On Approximate Values of, H. N. Sheppard, xxxii, 295.

FORCE OF MORTALITY. (1.) *Formulas and Tables—continued.***Tables of μ_x .**

- Experience (Seventeen Offices), Carlisle, and Davies' Equitable, by formula $\frac{d_{x-1}+d_x}{2l_x}$, W. S. B. Woolhouse, xi, 324; Northampton (by the same formula), W. S. B. Woolhouse, xv, 125.
- 11^M , by means of Makeham's formula ($\mu_x = -\log e s - \{\log_e q \log_e q\} q^x$), G. King and G. F. Hardy, xxii, 216.
- 11^M , by means of Woolhouse's formula ($\mu_x = \frac{7(d_{x-1}+d_x)-(d_{x-2}+d_{x+1})}{12l_x}$), G. King, xxvi, 279.
- Carlisle (Makeham's formula), G. King and G. F. Hardy, xxii, 221.
- G. F. Hardy's approximation ($\mu_x = \frac{l_{x-5}-l_{x+5}}{10l_x}$), xxiv, 108, xxvi, 294.
- J. Spencer's approximation $\mu_x = \frac{2d_{x-1}+5d_x-d_{x+1}}{6l_x}$, xxxiii, 353.

(2.) *General Articles.*

- Explanations and Remarks, S. Brown, xi, 15; T. B. Sprague, xiii, 21n, xvii, 268; W. A. Bowser, xvii, 332; W. M. Makeham, xiii, 325; W. Sutton, xvi, 450.
- Its value in terms of Central Death Rate, T. B. Sprague, xxi, 418, xxii, 86.
- Definition of, C. F. McKay, xxii, 24.
- Woolhouse's demonstration that under Makeham's law, $a_{xy} = a_{ss}$ when $\mu_x + \mu_y = 2\mu_s$, G. King and G. F. Hardy, xxii, 211. **See Uniform Seniority, Law of.**
- Its relation to Policy Values, J. Sorley, xxii, 337; G. F. Hardy and H. J. Rothery, xxvii, 179; G. H. Ryan, xxvii, 193, xxx, 7.
- FOREIGN BUSINESS**, Danger incidental to, G. H. Ryan, xxxii, 41.
- FOREIGN GOVERNMENT LOANS**, On the Rate of Interest yielded by, P. Gray, xiv, 182; W. M. Makeham, xviii, 132; W. Sutton, xix, 77.

FOREIGN INTELLIGENCE.(1.) *Life Insurance.***Austria—**

Account of the Companies, S. A. Daninos, iii, 121.

Denmark—

Life Insurance Legislation in, Dr. T. N. Thiele, xxxvii, 54.

France—

- Life Assurance Companies (1849) in, i, 63.
- Position of Tontine Associations from 1841 to 31 December 1849, i, 64.
- Notice of Guinet's pamphlet as to Assurance upon the lives of others, i, 75*.
- On the French Life Insurance Companies, H. W. Porter, i, 94*.
- Comparison of some of the principal Mutual Tontine Associations, i, 341.
- Progress of Life Insurance (1808 to 1847), S. Brown, ii, 16; (1850), S. Brown, ii, 210.
- History of Life Insurance, F. Hendriks, iv, 349.
- Insurance Statistics. Business and Capital of the Life Offices (1868), xvi, 73, 74.
- Law of Life Insurance in France, M. L. de Monthuc, xvii, 189.
- On Life Assurance in, F. A. Curtis, xix, 414.
- An Account of the French General and National Life Insurance Companies, xix, 435.
- Progress of Life Insurance throughout the World (translated from the French), Marco Besso, xxvi, 426.
- Law relative to the superintendence of Life Assurance Companies and kindred Institutions, xl, 343.

FOREIGN INTELLIGENCE. (1.) *Life Insurance—continued.*

Germany—

G. Hopf, Statement of Progress and Position of some of the Principal Life Offices at the close of the year 1818 or 1819, i, 228. Ditto 1819 or 1850, i, 316. The Constitution, condition, and prospects of the Companies (1851), iii, 134, 220. New Business and Position of Life Offices (1852), iv, 136; (1853), v, 159; (1854), vi, 108; (1855), vi, 353; (1856), viii, 51; (1857), viii, 163; (1858), with a general review of the progress of life insurance in Germany, and statistics of the Gotha Life Office, ix, 42.

Report as to the position of Life Insurance in Germany (1851), E. A. Masius, ii, 116.

Annuities. Report as to the position of the business in 1851, E. A. Masius, ii, 118. Summary of the business of Life Annuity Companies (1851), iii, 243.

Statistics (1850), S. Brown, ii, 211. Progress from 1850 to 1852, iv, 137; in 1853-4-5, vi, 353; in 1856, viii, 50, 54. Summary of the operations of the German Life Assurance Companies (1851), iii, 242.

On Government Interference with Assurance Companies, G. Hopf, iv, 141. Frauds in Life Assurance in (Extract from a letter of G. Hopf), v, 160.

Position of German Life Offices in 1855, W. Lazarus. Translated and abridged by S. Brown, vii, 217, 289, viii, 45.

German Life Assurance Offices in 1867. Translated by G. W. Berridge, xv, 55. Statement of business in 1870, xvii, 200; in 1873, xix, 42.

Suggestions for Legislation to regulate the calculation and investment of the Reserve in Life Assurance Companies, G. Hopf, xv, 270.

German Life Insurance Companies in 1873. Translated by D. A. Bunsted, xix, 42.

Life Insurance Offices in 1881, Dr. A. Emminghaus, xxiv, 55.

Business management of Foreign Life Insurance Companies according to German Imperial law, Dr. K. Sauer, xxxvi, 374.

Amendment of the basis of calculation of the Gotha Life Office (Dr. J. Karup). *Review* by T. E. Young and W. R. Strong, xxxviii, 373.

Holland—

Summary (1851) of the Assurance Business of, S. Brown, ii, 211.

Account of a recent change in the law relating to Life Insurance, H. Pimentel, xix, 210.

United States—

Act with respect to Insurances on Lives for the benefit of married women, i, 220.

New York. Table showing, so far as known, the state of Life Assurance Companies in the United States, 1 January 1851, drawn principally from the Reports made and sworn to by their Officers and Trustees before the Comptroller of the State of New York, January 1851, ii, 186. Summary (1851) of their Assurance Business, S. Brown, ii, 212. Fifth Annual Report of the Superintendent of the Insurance Department, *Review*, xii, 110. Eighth ditto, *Review*, xiv, 226.

Massachusetts. Extract from the 6th Annual Report of the Insurance Commissioners (Elizur Wright and G. W. Sargent) of the Commonwealth of, ix, 270. Articles on the 13th ditto, 1 January 1868, Part II, Life and Accident Insurance, xv, 31.

New York Mutual Life Insurance Company, An account of the (Editorial), xiv, 322.

Legislation and the Net-Premium Method of Valuation, E. Wright, xvi, 355. Report on the Life Association of America, 1870, W. Barnes, xvi, 358.

New Law regarding Insolvent Life Companies, xx, 439.

Life Insurance in 1880, Tables from "The Chronicle" (New York), (containing certain particulars as to American companies from 1879-1880), xxiii, 60.

American Tontine and Mutual Assessment Schemes, H. W. Manly, xxvi, 182.

Assessment System of Life Insurance, W. Sutton, xxviii, 417.

Systems of Life Assurance in, G. H. Ryan, xxxii, 45.

American Valuation Tables, W. A. Hutcheson, xxxvii, 91.

FOREIGN INTELLIGENCE—*continued.*(2.) *General Articles.***Africa—**

Mortality Experience,

Central Africa (among Europeans), T. B. Sprague, xxv, 437.

West Coast of Africa (among Europeans), Dr. T. G. Lyon, xxix, 541;
(Government Officials), J. R. Hart, xxxiii, 307; L. K. Pagden,
xxxiii, 359; (Assured Lives), A. Levine, xxxiii, 516.

In Certain Parts of, A. E. Sprague, xxxiii, 285.

"Assurance Legislation in the South African Republic." Reprinted from
Acton's Translation of the *Government Gazette*, South African Republic,
4th August, 1892, xxxii, 31.On the Geographical Distribution of Tropical Diseases in (Dr. R. W.
Felkin). *Review* by A. E. Sprague, xxxii, 65.

Vaccination and Smallpox in, Sir H. M. Stanley, xxxvii, 292.

Austria—

Mortality Experience,

Gresham Life Office (1865-74), F. A. Curtis, xix, 242.

Among Jews, T. B. Sprague, xxvii, 155.

On its Statistics. (Address to the Brussels Statistical Congress), Baron
Czoerning, v, 28.Smallpox, Dr. Keller's Report on the Sickness from, among Employees of
the State Railway Company. Translated by T. B. Sprague, xx, 222.Legislation in regard to Compensation to Workmen for Accidents, J.
Nicoll, xxxvi, 450.Attacks and Deaths from Smallpox in the Austrian Army, A. F. Burridge,
xxxvii, 281.**Belgium—**Project of Law *re* Deferred Government Annuities (1849), i, 71.

Marriage Rate at Different Ages of the Sexes, S. Brown, ii, 347, vii, 188.

Return of Casualties in Mines, in years 1841 to 1849, in comparison with
those in Prussia, iii, 166.

Friendly Societies, G. F. Hardy, xxvii, 266.

Legislation in regard to Compensation to Workmen for Accidents,
J. Nicoll, xxxvi, 476.**California—**

Rate of Mortality in, iii, 300.

Denmark—

Mortality Experience,

Among the Danish Clergy, H. Westergaard, xxiii, 29, 40.

On its Statistics (Address to the Brussels Statistical Congress), M.
Bergsoe, v, 25.

Friendly Societies, G. F. Hardy, xxvii, 269.

Legislation in regard to Compensation to Workmen for Accidents, J.
Nicoll, xxxvi, 472, 550.**France—**

Mortality Experience,

Female Lives, G. H. Ryan, xxix, 71.

Assured Lives and Annuitants, G. F. Hardy, xxxiii, 485.

Remarks on Hubbard's New Table of Mortality deduced from the
experience of Benefit Societies (Extract from *l'Industrie*), iii, 59.On the Sickness and Mortality in Friendly Societies in France, S. Brown,
v, 208.

Friendly Societies, G. F. Hardy, xxvii, 263.

"Assurance Risks of Warfare", A. H. Smeed and T. G. Ackland, xxviii, 463.

Basis of Office Premiums, H. W. Andras, xxxii, 345.

Legislation in regard to Compensation to Workmen for Accidents, J.
Nicoll, xxxvi, 434.Premiums for Assurance against Accidents in various occupations, J. Nicoll,
xxxvi, 543.Attacks and Deaths from Small-pox in the French Army, A. F. Burridge,
xxxviii, 281.

FOREIGN INTELLIGENCE. (2.) General Articles—continued.**Germany—****Mortality Experience,**

Gotha Office, 1829-1848, i, 75. 1829-1878. *Review* by T. E. Young and W. R. Strong, xxxviii, 292.

Brune's Prussian Widows' Fund, Mortality Tables deduced from 69 years' experience of the, iii, 30.

Population of Berlin (1854) and ratio of mortality in 1000 Deaths before 1796 and in 1852-4, vii, 41.

Gotha Tables, D. A. Bumsted, xxiv, 68; J. Chatham, xxix, 142; T. B. Sprague, xxxi, 226.

Female Lives, G. H. Ryan, xxix, 71.

Twenty-three German Offices, P. L. Newman, xxix, 476.

Germans engaged in the Franco-German War, 1870-71, A. H. Smee and T. G. Ackland, xxxiv, 381-5.

From Cancer, in Frankfort-on-Main, G. King and Dr. A. Newsholme, xxxvi, 148.

Suicide in Berlin (1849-1850), ii, 292.

Return of Casualties which have occurred in the Mines of the Prussian States in the years 1841 to 1849, in comparison with those which have taken place in Belgium, iii, 166.

Proposition of Law (1853) concerning the Regulation of Assurance Companies in Prussia, iii, 244.

On its Statistics (Address to the Brussels Statistical Congress), M. Dieterici (Prussia), v, 26; M. de Hermann (Bavaria), v, 27.

Leipzig Friendly Society, W. Lazarus, viii, 351.

Dr. A. Wagner's "On the Law prevailing in the acts apparently under the control of the Human Will, &c." *Notice* by W. Lazarus, xii, 183.

Dr. A. Wiegand's "On Assurance against permanent incapability, &c." *Notice* by W. Lazarus, xii, 183.

German Life Insurance Institute, Foundation of, xiv, 248; Laws of, xiv, 460. *Proceedings*: On the Arithmometer of M. Thomas and Dr. Zillmer, xv, 25. On the Antagonism between Theory and Practice, Dr. A. Wiegand, xv, 28.

Insurance Bill drawn up by the Managers of the German Insurance Companies, xv, 285.

"Mortality and Insurance, treated in a new manner" (Dr. H. Scheffler). *Review*, xv, 292.

German Law relating to the Insurance of Workmen against Sickness, P. Köhne, xxiv, 220.

Friendly Societies, G. F. Hardy, xxvii, 267.

"Assurance Risks of Warfare", A. H. Smee and T. G. Ackland, xxviii, 463, xxxiv, 384, 385.

German Law of Insurance against Invalidity and Old Age, T. E. Young, xxix, 269.

Legislation in regard to Compensation to Workmen for Accidents, J. Nicoll, xxxvi, 440, 548.

Premiums for Assurance against Accidents in various trades in Germany, J. Nicoll, xxxvi, 542.

Attacks and Deaths from Smallpox in the Prussian Army, A. F. BurrIDGE, xxxvii, 281.

Greece—

Mortality among Greek Clergy. D. A. Bumsted, xxiii, 35.

Legislation to Compensation to Workmen for Accidents, J. Nicoll, xxxvi, 548.

Holland—**Mortality Experience,**

National Life Insurance Company of Rotterdam (1863-73), xix, 250.

"Memoires pour servir à l'histoire des Assurances sur la vie et des Rentes Viagères aux Pays-Bas." *Review* by F. Hendriks, xxxiv, 386.

FOREIGN INTELLIGENCE. (2.) *General Articles—continued.***Holland—continued.**

Letter addressed to the Members of the Second International Congress of Actuaries (1898), by the Managers of the "Algemeene Maatschappij van Levensverzekering en Lijfrente", of Amsterdam, in reference to the publication of the "Memoires pour servir à l'histoire des Assurances sur la vie et des Rentes Viagères aux Pays-Bas", and to the bringing to light of the work of De Witt and Hudde in connection with Actuarial Science, F. Hendriks, xxxiv, 390.

Legislation in regard to Compensation to Workmen for Accidents, J. Nicoll, xxxvi, 475, 547.

Iceland

Vital Statistics. Deaths by drowning, i, 352. Fertility of Women, i, 352.

Italy

Legislation in regard to Compensation to Workmen for Accidents, J. Nicoll, xxxvi, 456.

Norway—

Mortality Experience,

Norwegian General Widows' Fund, O. Schjoll, xxviii, 89.

Legislation in regard to Compensation to Workmen for Accidents, J. Nicoll, xxxvi, 465.

Russia—

Legislation in regard to Compensation to Workmen for Accidents, J. Nicoll, xxxvi, 476.

Spain—

Legislation in regard to Compensation to Workmen for Accidents, J. Nicoll, xxxvi, 474.

Sweden—

Mortality Experience,

Pole Star Insurance Company of Stockholm, T. B. Sprague, xxvi, 471, xxvii, 155.

Switzerland—

Friendly Societies, G. F. Hardy, xxvii, 269.

Legislation in regard to Compensation to Workmen for Accidents, J. Nicoll, xxxvi, 469.

United States—

Mortality Experience,

New York Mutual, from 1843-51 (United States and California), iii, 300; 1843-73, xxix, 119, 142.

Mutual Benefit Life Insurance Company of New Jersey, viii, 192, xix, 28.

Deduced from the Census of 1860, S. Brown, xiii, 272.

American Tables of Mortality, C. F. McCay, xvi, 20.

Thirty American Offices, G. H. Ryan, xxiv, 288, xxvi, 250, xxviii, 221; T. B. Sprague, xxvi, 306; J. Chatham, xxix, 142; R. R. Tilt, xxxii, 9.

Connecticut Mutual, D. H. Wells, xxv, 368; G. H. Ryan, xxvi, 254, xxviii, 221; B. Newbatt, xxvii, 190; J. Chatham, xxix, 85, 113.

Philadelphia, Provident Life and Trust Company of, T. B. Sprague, xxvi, 316.

Washington Life Insurance Company, G. H. Ryan, xxviii, 220.

Tables based on American Censuses, J. Chatham, xxix, 140.

Regarding the Mortality Investigation instituted by the Actuarial Society of America, D. P. Fackler, xxxvii, 1.

"Experience of Thirty-four Life Companies upon Ninety-eight Special Classes of Risks, &c.," *Review* by J. D. Watson, xxxviii, 363.

Massachusetts. Marriage rate at different ages of the sexes, S. Brown, vii, 188.

The first American Life Underwriters' Convention, viii, 268.

Report of the Committee on Vital Statistics. Remarks by S. Homans, ix, 235.

Eighth Census (in 1860), S. Brown, xiii, 226.

FOREIGN INTELLIGENCE. (2.) *General Articles—continued.***United States—continued.**

Insolvent Life Offices, Valuation of Policies in (from *Spectator*, New York, xxiii, 306.

Rate of Interest from Investments (from *Spectator*, New York, xxiii, 436.

American Life Insurance Dividends (from *Spectator*, New York, xxiv, 52.

Death Losses, Union Mutual Life Insurance Company of Portland, Maine, Dr. T. A. Foster, xxv, 251.

Assignment of Life Policies in, (Editorial), xxvii, 420.

Actuarial Society of America, T. B. Macaulay, xxix, 544. The Decennial Celebrations, I. C. Pierson, xxxv, 130.

Some Observations on Insurance Matters in the, G. H. Ryan, xxxii, 39.

Registry of Declined Lives in American Companies, G. H. Ryan, xxxii, 43.

High Percentage of Discontinuances in the, G. H. Ryan, xxxii, 45, 46.

Non-Forfeiture in the, G. H. Ryan, xxxii, 46, 47.

Modes of Tabulating Expenditure in Life Assurance Companies in the, G. H. Ryan, xxxii, 46.

Report on the Arrangement of Commutation Columns, I. C. Pierson, xxxiii, 31.

Governmental Regulation of Life Assurance, S. Homans, xxxiii, 320; J. Chisholm, xxxiii, 336.

The Law relating to Surrender-Values in the case of the Massachusetts Companies, F. W. Fulford, xxxv, 202; F. L. Cutting, xxxv, 203.

Legislation in regard to Compensation to Workmen for Accidents, J. Nicoll, xxxvi, 477.

See also Press Extracts.

FORESTERS' (A. O. of) EXPERIENCE. References, G. F. Hardy, xxvii, 288; F. G. P. Neison, Jr., xxxi, 152.

FORFEITURE OF POLICIES. *See Non-Forfeiture.*

FORSTER (Dr. T. W.). Inquiry into the average Longevity of Vegetarians, compared with that of Persons who live on a Mixed Diet, vii, 148.

FOSTER (G. C.). The Method of Quarter Squares (reprinted from *Nature*), xxviii, 235.

FOSTER (Dr. T. A.). Report upon the Death Losses in the Union Mutual Life Insurance Company (Portland, Maine), T. B. Sprague, xxv, 251.

FOUNDATION OF THE INSTITUTE. *See Institute of Actuaries.*

FOURIER'S STATISTICAL TABLES, A. De Morgan, xiv, 89.

FOUSE (L. G.). Extract from his Report on Standard Rates for Assessment Companies, xxvi, 208.

FOWLER AND OTHERS v. THE SCOTTISH EQUITABLE. "Philo-Scotie" on a Pamphlet published by the Directors of the Society, viii, 297.

FRACTIONAL INTEREST, Income Tax on, J. E. Faulks, xxxviii, 315.

FRACTIONAL INTERVALS OF A YEAR, The proper expression for the amount of £1 at interest for, E. J. Farren, iii, 335; D. Chisholm, iii, 336; H. Filipowski, iii, 338, iv, 243, 253; W. Orchard, iv, 61; "A Young Associate", iv, 72; B. Gompertz, iv, 245; "1", iv, 253; H. Ivory, iv, 292; W. Sutton, xvi, 437.

— The Transformation of Annuities (certain) and Annuity-Values payable yearly into the like when payable in, D. J. McG. McKenzie, xxii, 162.

— Valuations of Policies subject to half-yearly and quarterly premiums, G. King and T. B. Sprague, xxiii, 256, 261.

— Benefits payable fractionally, G. King, xxiv, 418, xxv, 156.

— Various Methods of treating, in deducing Age at Entry, T. B. Sprague, xxxi, 219.

— On the effect on the rate of mortality of fractional years of exposure, G. J. Lidlstone, xxxi, 304.

FRANCE. *See Foreign Intelligence.*

FRANCIS (J.). "Annals, Anecdotes and Legends; a Chronicle of Life-Assurance", *Review*, iv, 75.

FRANKLAND (F. W.). On Ratcliffe's Sickness Tables, xxi, 380.

— Extract from his Third Annual Report (as Registrar) on Friendly Societies in New Zealand, xxii, 449.

— Letter with Suggestions as to Statistics of Individual Sickness, xxii, 451.

FRANKLAND (F. W.)—*continued.*

— Statistics deduced from Census Returns and Registry of Deaths of the Colony of New Zealand, xxiv, 211. Reference, A. F. Burridge, xxiv, 347.

FRASER (A.). Annuities—Certain and Income Tax, xxxiv, 102.

— Reserve Value of Double Endowment Assurances, xxxiv, 102.

FRASER (D. C.). A Method of finding the actual yield on Stock sold at a premium, including the increase in capital value, xxxiv, 497.

— A Comparison of the various Methods of Grouping Whole-Life Assurances for Valuation, xxxviii, 385. Reference, G. King, xl, 11.

— On the use of O.M. Select Premiums for Valuation purposes, xl, 122.

FRASER (T.). On the authorship of Dr. S. H. Ward's Medical Estimate of Life for Life Assurance, viii, 357.

FRAUD IN LIFE ASSURANCE. Extract from Letter of G. Hopf, v, 160.

— Suggestions for preventing, C. Walford, xxii, 7.

— Correspondence from *Insurance Record*, Dr. J. F. Arlidge, xxii, 180; T. B. Sprague, xxii, 181; G. S. Crisford, xxii, 188.

FREQUENCY CURVES, Graduation by means of, W. P. Elderton, xxxvii, 502.

— And Mortality Tables, G. F. Hardy, xxxiii, 530.

FRIENDLY SOCIETIES.

— Certificate required to Rules of, iii, 12.

— Sickness and Mortality experienced in them. A. G. Finlaison's Report, *Review*, iv, 269; H. Tompkins, iii, 7, v, 6; T. R. Edmonds, v, 127; J. A. Higham, vii, 112; in France, S. Brown, v, 208; in Germany, G. Hopf, ix, 50.

— In France, Remarks on Hubbard's Mortality Tables (Editorial), iii, 59.

— On the Leipziger Krankenkasse, W. Lazarus, viii, 351.

— In England and Wales, On the present position (1864) of, S. Brown, xi, 333.

— *Edinburgh Review* on the History and Tendency of Past Legislation with reference to, xviii, 47.

— In New Zealand, extract from Registrar's Third Annual Report, xxii, 449.

— Finance of (reprinted from *The Times*), xxiv, 301, xxviii, 236.

— Notes on Legislation, G. H. Ryan, xxv, 24. Reference, A. J. Cook, xxv, 216.

— Discussion on the Report of the Royal Commission on (from *Insurance Record*), xxv, 36.

— Superannuation in, S. Brown, xxv, 42.

— The Actuarial Certification of Annuity Tables, under "The Friendly Societies Act, 1875", W. Sutton, xxvi, 225.

— Levies, G. King, xxvi, 389; G. F. Hardy, xxvi, 478, xxvii, 303.

— Report of Select Committee on National Provident Insurance, xxvi, 484.

— Messenger Prize Essay, 1886, G. F. Hardy, xxvii, 245.

— Membership Funds of Affiliated Orders, G. F. Hardy, xxvii, 258.

— Aggregate Balance Sheet of 6,567 Registered Societies, G. F. Hardy, xxvii, 261.

— Experience of New Zealand Friendly Societies, G. F. Hardy, xxvii, 262.

— Valuation of, G. F. Hardy, xxvii, 293.

— Under Section 30 of the Friendly Societies Act, W. Sutton, xxvii, 411.

— Article from *Quarterly Review*, xxviii, 112.

— Provision for Old Age in, Sir E. W. Brabrook, xxx, 235.

— An enquiry into the method of representing and giving effect to the experience of, with some account of the Hearts of Oak Benefit Society and its Experience for the years 1884-91, R. P. Hardy, xxxi, 86.

— "Valuation and other tables" (W. A. Bowser). *Review* by G. F. Hardy, xxxiii, 268.

— "Report on the Sickness and Mortality Experience of, in England and Wales" (W. Sutton). *Review* by G. F. Hardy, xxxiii, 268.

— The Methods of Analysing and presenting the Mortality, Sickness, and Secession Experience of, with Examples drawn from the Experience of the Manchester Unity of Oddfellows, A. W. Watson, xxxv, 268.

— Summary of Tables published, A. W. Watson, xxxv, 270.

— Effect on Mortality and Sickness rates of grouping the facts according to density of population and occupation, A. W. Watson, xxxv, 271.

FRIENDLY SOCIETIES *continued.*

— Extension of Powers for purposes of the Workmen's Compensation Act, 1897, J. Nicoll, xxxvi, 431.

— "An Account of an Investigation of the Sickness and Mortality Experience of the I.O.O.F. Manchester Unity Friendly Society, during the Five Years, 1893-1897." *Review* (Editorial), xxxviii, 369. Graduation of the Experience, J. Spencer, xxxviii, 334.

— Historical Memorandum in connection with Actuarial Certificates, xl, 212.

— Sickness in. *See Sickness.*

See also Acts of Parliament.

FULFORD (F. W.). On Surrender-Values and the Principles which underlie their Calculation, xxxv, 199.

FUNCTION, Integration by means of selected values of, W. S. B. Woolhouse, xxvii, 122.

FUNDS. Investment of Assurance Companies', S. Brown, vii, 241; A. H. Bailey, x, 142; J. Coles, xv, 1; A. G. Mackenzie, xxix, 185.

— Formula for calculating the Force of Interest on, G. F. Hardy, xxix, 190.

— Debentures of Trading Companies as Investments for Life Assurance Companies, A. R. Barrand, xxxiv, 421.

FUNDS (Staff Pension). *See Pension Funds.*

FUNERAL LEVIES in Friendly Societies, G. King, xxvi, 289; G. F. Hardy, xxvi, 478, xxvii, 303.

FUSS (N. von). Historical notice of him, F. Hendriks, i, 19.

GALBRAITH (Rev. J. A.). Manual of Algebra, *Review*, xiv, 59.

GALLOWAY (T.). Reference to his Method of compiling the Amicable Mortality Experience, C. Jellicoe, iv, 201.

— On his Method of Adjustment, C. Watkins, vi, 178, 360.

— Method of Deducting the Exposed to Risk in the Amicable Experience, G. H. Ryan, xxvi, 256, 259; J. Chatham, xxix, 94, 117; W. J. H. Whittall, xxxi, 168.

GALSWORTHY (E. H.). Single and Annual premiums for the Insurance of Master Mariners, calculated according to Neison's observations, iv, 88.

— On the amount and present value of an Annuity, increasing or decreasing by a constant quantity, v, 53.

GAUSS' THEOREM. G. F. Hardy, xxiv, 103, xxvi, 294; A. W. Sunderland, xxvi, 299; W. S. B. Woolhouse, xxvii, 122.

GENERAL ANNUITY TRUST FUND. The Rates of Mortality amongst the Female Nominees, G. King, xxxiii, 262.

GERMAN LAW OF INSURANCE, Of Workmen against Sickness, P. Köhne, xxiv, 220.

— Against Invalidity and Old Age, T. E. Young, xxix, 269.

— Affecting the Management of Foreign Companies doing business in Germany, Dr. K. Samwer, xxxvi, 374.

GERMAN LIFE ASSURANCE INSTITUTE. Letter announcing its foundation, W. Lazarus, xiv, 248. Translation of its Rules by J. Hill Williams, xiv, 460. Extracts from its Proceedings, xv, 25, 28.

GERMAN LIFE INSURANCE Companies in 1881, The Condition and Progress of, Dr. A. Emminghaus, xxiv, 55. *See also D. A. Bumsted and G. Hopf.*

GERMAN WORKS ON LIFE INSURANCE, W. Lazarus, viii, 174, xii, 183.

GERMANY. *See Foreign Intelligence.*

GILL (C.). On the Determination of Surplus, i, 357.

— Rates of Mortality in the United States and California, as shown by the experience of the Mutual Life Insurance Company of New York, from 1 February 1843, to 1 February 1851, iii, 300.

— Historical Sketch of the Life of from the "United States Assurance Gazette", vi, 216.

GILLISON (J. B.). Income Tax and Life Assurance, in the States of Australia and New Zealand, xxxviii, 325.

GLAISHER (J. W. L.). On errors in Tables of Logarithms of numbers, xvii, 352.

— Note on the calculation of Logarithms, to a large number of places by means of Factor Tables, xxii, 316. Reference, P. Gray, xxii, 350.

GLAISHER (J. W. L.) *continued.*

— The Method of Quarter Squares (reprinted from *Nature*), xxviii, 227.
Reference, G. C. Foster, xxviii, 235.

“**GLASGOW MEDICAL JOURNAL.**” Walford's Insurance Cyclopædia, Vols. I and II, *Review*, xix, 69.

GODEFROI (H.). On Mortgages of Reversionary Interests, xxv, 55.

GODWARD (W.). Note on a Method for finding the value of an Annuity on the last Survivor of Three Lives, xvii, 266. Reference, E. Smyth, xvii, 379.

GOLD. Its comparative value in different countries, C. Jellicoe, vi, 104; F. Hendriks, vi, 176, 177.

GOMPERTZ (B.). Letter on the Interest Question, iv, 245.

— Letter to H. W. Porter, ix, 296. Reference, M. N. Adler, xiii, 13.

— On one uniform Law of Mortality from Birth to extreme Old Age, and on the law of Sickness, xvi, 329.

— Notice of his Papers, S. Brown, i, 23.

— On his Method of Interpolation of Logarithmic Series, J. Meikle, vi, 200.

— On his Method for the Adjustment of Mortality Tables, P. Gray, vii, 121.
Errata, vii, at 1, xiii, at 1.

— On the Calculation of Premiums for Assurances on Lives and Survivorships by the aid of his Hypothesis, W. M. Makeham, ix, 361.

— Showing that his Law leads to Simpson's Three-Life Annuity Rule, A. De Morgan, viii, 181, x, 27; W. S. B. Woolhouse, x, 124, xiii, 101, xv, 399. Reference, A. De Morgan, x, 237. *See also* R. Henderson, xxxii, 293; J. M. Allen, xxxiii, 535; A. Levine, xxxiii, 538; J. Govan, xxxiv, 147.

— Remarks on his law of Mortality, W. M. Makeham, viii, 302, 306, xiii, 333.

— On an Unfair Suppression (by T. R. Edmonds) of due acknowledgment of his Writings, A. De Morgan, ix, 86, 214. Mr. Edmonds's Reply, ix, 170.

— On his Law of Human Mortality, and T. R. Edmonds's claims to its independent discovery and extension, T. B. Sprague, ix, 288.

— Letter on his Papers, containing a Reference to the preceding Paper, and forwarding a Letter from him to Mr. Porter, H. W. Porter, ix, 296.

— On the recent Imputations made as to his Accuracy, T. B. Sprague, x, 32.

— Formula for the Number Living, in terms of the Mortality according to Age, on the Value of, T. R. Edmonds, x, 101.

— On W. M. Makeham's modification of his theory of the Law of Mortality, P. Gray, xi, 236.

— Law of Mortality: Modification of his Formula, W. M. Makeham, xii, 314, xiii, 335.

— Function Expressive of the Law of Mortality: Corrections, M. N. Adler, xiii, 13.

— On the Determination of the Constants involved in his Formula, W. S. B. Woolhouse, xv, 403.

— On the Extension of his Theory to the entire Period of Life, W. M. Makeham, xvi, 344.

— On the Integral of his Function for Expressing the Values of Sums depending upon the Contingency of Life, W. M. Makeham, xvii, 305, 445. Erratum, xvii, 446.

— Further Development of his Law of Mortality, W. M. Makeham, xxviii, 152, 185, 316. References, Author, xxviii, 393; W. S. B. Woolhouse, xxviii, 181, xxix, 241; G. H. Ryan, xxx, 5, 7.

— On the Application of Makeham's Modification of Gompertz's Expression for the Law of Mortality to the practical calculation of the values of Survivorship Benefits, F. E. Colenso, xxxi, 337.

— Memoir of him, M. N. Adler, xiii, 1.

See also Graduation.

GOTHA LIFE OFFICE. Its History up to 1851, G. Hopf, iii, 138.

— Operations for the First Twenty-five Years of its Existence, particularly with respect to the Mortality experienced, G. Hopf, v, 324, vi, 1, ix, 47.

— Mortality Experience of. Reference, T. B. Sprague, xxxi, 226.

— Mortality Experience of the, (1829-1878). *Review* by T. E. Young and W. R. Strong, xxxviii, 292.

— The Amendment of the Basis of Calculation of the, Dr. J. Karup. *Review* by T. E. Young and W. R. Strong, xxxviii, 373.

See also Mortality (1).

GOTHA MORTALITY TABLES (Males), xxiv, 68, xxix, 122.

GOVAN (J.). On Gompertz's Law of Mortality, xxxiv, 147.

GOVERNMENT ASSURANCE BY THE STATE, W. Lazarus, i, 378.

GOVERNMENT SECURITIES, On the Valuation of, E. J. Farren, v, 310.

— As an investment for Assurance Societies, A. H. Bailey, x, 144.

GOVERNMENT LIFE ANNUITIES. Deferred Annuity Tables, J. W. Stephenson, x, 44, xii, 178, 302, xiii, 144. Sums invested and Annuities granted in the years 1853-1868; also Annuities chargeable on the Consolidated Fund in each of those years, xv, 23. Female Annuitants' Table, 1881 (A. J. Finlaison's). Graduation of Ultimate Table, T. B. Sprague, xxvi, 77. Employment of, for Counter-Life in Survivorship Assurances, A. W. Sunderland, xxvii, 82; H. E. Nightingale, xxx, 27. Male Annuitants' Table (John Finlaison's), W. M. Makeham, xxviii, 187. Joint Life Tables (A. J. Finlaison's), Announcement of Publication, xxxii, 145.

GOVERNMENT LIFE ANNUITIES AND LIFE ASSURANCES. On the Bill, M. N. Adler, xii, 3. On the Rates and Regulations, M. N. Adler, xii, 265.

GOVERNMENTAL REGULATION OF LIFE INSURANCE in the United States of America, S. Homans, xxxiii, 320; J. Chisholm, xxxiii, 336.

GRADUATION of Mortality and Other Numerical Tables.

See C. Jellicoe, i, 169, iv, 205; W. M. Makeham, vi, 357, viii, 301, xii, 305, xiii, 346, xvi, 411, xxviii, 152, 185, 316; W. S. B. Woolhouse, xi, 61, 301, xii, 136, xiii, 98, xv, 389, xxi, 37, 56, xxix, 236; M. N. Adler, xii, 269; S. C. Chandler, Jr., xvii, 161; W. A. Bowser, xviii, 333; S. Brown, xvii, 339; A. J. Finlaison, xviii, 168, xx, 187; J. Sorley, xx, 340, xxii, 309; W. Sutton, xx, 170, 192; W. Lazarus, xx, 410; T. B. Sprague, xxi, 229, 445, xxii, 391, xxvi, 77, 477, xxix, 59, 232, xxx, 161; C. F. McCay, xxii, 24; G. King and G. F. Hardy, xxii, 201; A. F. Burrigide, xxiii, 309; J. A. Higham, xxiii, 335, xxiv, 44, xxv, 15, 245, xxvii, 427, xxxi, 319; G. F. Hardy, xxiii, 351, xxxii, 371, xxxiii, 493, xxxviii, 501; T. G. Ackland, xxiii, 352; Dr. T. Wittstein, xxiv, 153, xxxiii, 399; G. King, xxiv, 186; D. Carment, xxiv, 224; C. D. Higham, xxvi, 50, 478; A. Levine, xxxii, 290; R. Todhunter, xxxii, 378; H. P. Calderon, xxxv, 162; E. M. Moors and W. R. Day, xxxvi, 158, 175; W. P. Elderton, xxxvii, 502; J. Chatham, xxxvii, 526; J. Spencer, xxxviii, 334, 341.

— **Ansell's Method**, T. B. Sprague, xxvi, 80; R. Todhunter, xxxii, 385.

— **Berridge's Method**, xii, 220, xiv, 244. Reference, W. Sutton, xx, 173.

— **Calderon's Method** of finding $\log e$ from "Exposed to Risk", xxxv, 162.

— **Criteria of a Good**, W. S. B. Woolhouse, xxi, 66; C. F. McCay, xxii, 36; J. Sorley, xxii, 309; A. J. Finlaison, xxvi, 78; T. B. Sprague, xxvi, 79; J. Chatham, xxix, 110.

— **Davies's Method**, W. Sutton, xx, 176.

— **Elderton's Method**, Frequency curves and cubic parabolas, xxxvii, 502.

— **A. G. Finlaison's Method**, R. Todhunter, xxxii, 384.

— **A. J. Finlaison's Method**, T. B. Sprague, xxvi, 77; J. Chatham, xxix, 109.

— **J. Finlaison's Method**, x, 159, xviii, 168; H. A. Smith, xiii, 58; W. Sutton, xx, 172; A. J. Finlaison, xx, 187, xxi, 49; P. Gray, xx, 188, xxi, 50; W. S. B. Woolhouse, xxi, 50, 57; J. A. Higham, xxiii, 335, xxv, 15; T. G. Ackland, xxiii, 352, xxvi, 117; R. Todhunter, xxxii, 384.

— **French Actuaries' Method**, G. F. Hardy, xxxiii, 488.

— **Frequency Curves**, Karl Pearson. G. F. Hardy, xxxiii, 530; W. P. Elderton, xxxvii, 502.

— **Gompertz's Method**, P. Gray, vii, 121; W. S. B. Woolhouse, xiii, 101, xv, 398; W. S. Nichols, xix, 28; J. Chatham, xxix, 109; Further Development of, W. M. Makeham, xxviii, 152, 186, 316.

— **Graphic Method**, J. Sorley, xxii, 320; Sir J. F. W. Herschell, xxii, 323; (a Modification suitable to Census Returns), A. F. Burrigide, xxiii, 309; (use of Makeham's as a base line for), G. F. Hardy, xxv, 229; (with application to Finlaison's Observations on the Mortality of Female Government Annuitants, four years and upwards after purchase), T. B. Sprague, xxvi, 77, 477; Opinion of it, Dr. Whewell, xxx, 161; (Its application to a limited Experience), G. J. Lidstone, xxx, 212; Graduation of the British Offices Annuity Experience, 1863-1893, J. Chatham, xxxvii, 526.

GRADUATION—*continued*.

- G. F. Hardy's Summation Formula (modification of Woolhouse's), xxvii, 277; J. A. Higham, xxvii, 427; Author, xxxii, 374; R. Todhunter, xxxii, 385.
- G. F. Hardy's Formula (modification of Makeham's for Select Tables), xxxiii, 493, xxxviii, 501; ($0^{[30]}$ table) expansion of $(x)p_{x+t} - x p_{x+t}$ in ascending powers of e^x , T. G. Ackland, xl, 75; G. J. Lidstone, xl, 83.
- J. A. Higham's Method, Author, xxiii, 335, 351, xxiv, 41, xxv, 15, 245; xxvii, 427; T. B. Sprague, xxvi, 77; J. Chatham, xxix, 106; A. Levine, xxxii, 290; G. F. Hardy, xxxii, 371; R. Todhunter, xxxii, 378.
- C. Jellicoe's Method, iv, 205; W. Sutton, xviii, 375.
- Kanner's Method, W. Lazarus, xvi, 424.
- Makeham's Method, vi, 357, xii, 305, xiii, 346, xvi, 411. Reference, W. Sutton, xx, 174. On the determination of the Constants, W. S. B. Woolhouse, xv, 399; J. Sorley, xx, 340; H. P. Calderon, xxxv, 157; (Aggregate Method), G. King and G. F. Hardy, xxii, 201; (Residual Series), xxii, 205; J. Sorley, xxii, 328; Dr. J. Karup, xxiv, 70; G. H. Ryan, xxx, 3; (modified for Select Tables), G. F. Hardy, xxxiii, 493, xxxviii, 501.
- Method of Least Squares, Dr. T. Wittstein, xxxiii, 399. Reference, G. F. Hardy, xxxiii, 490.
- Milne's Method, A. F. BurrIDGE, xxiii, 320; W. Sutton, xxiv, 110; G. King, xxiv, 186; E. M. Moors and W. R. Day, xxxvi, 158, 175.
- Spencer's Summation Formulas, xxxviii, 334.
- Summation Method, J. A. Higham, xxiii, 335, xxiv, 44, xxv, 15, 245, xxvii, 427, xxxi, 319; G. F. Hardy, xxiii, 351, xxvii, 277, xxxii, 371; T. G. Ackland, xxiii, 352; D. Carment, xxiv, 224; A. Levine, xxxii, 290; R. Todhunter, xxxii, 378; J. Spencer, xxxviii, 334. *See also* Woolhouse's Method.
- Woolhouse's Method. (His first method applied to 17 offices' Experience), xii, 141; (His method applied to 20 offices' Experience), xv, 389; W. M. Makeham, xvi, 411; W. Sutton, xx, 175; W. Lazarus, xx, 410; Author, xxi, 37, 56; A. J. Finlaison, xxi, 49; J. C. Hamnyngton, xxi, 50; G. King, xxi, 51; G. King and G. F. Hardy, xxii, 203; J. Sorley, xxii, 313; J. A. Higham, xxiii, 335, 341, xxiv, 51, xxxi, 319; G. F. Hardy, xxiii, 351, xxxii, 372; T. G. Ackland, xxiii, 352; D. Carment, xxiv, 224; C. D. Higham, xxvi, 50; T. B. Sprague, xxix, 59; J. Chatham, xxix, 106; R. Todhunter, xxxii, 384; H. P. Calderon, xxxv, 159; J. Spencer, xxxviii, 339.
- Tables Graduated.
 - Eagle Experience. C. Jellicoe, iv, 205; W. M. Makeham, vi, 357.
 - Experience (Seventeen Offices) Table. W. M. Makeham, viii, 301.
 - HMF Table. W. S. B. Woolhouse, xv, 389, xxi, 37, 56; C. F. McCay, xxii, 24.
 - Hodgson's Clergy Life Tables. W. A. Bowser, xvii, 333.
 - H^[30] Select Tables. T. B. Sprague, xxi, 229, xxii, 391.
 - H^[1] Table. G. King and G. F. Hardy, xxii, 201; J. A. Higham, xxiii, 335, xxiv, 44; T. G. Ackland, xxiii, 352; D. Carment, xxiv, 224; Dr. T. Wittstein, xxxiii, 399.
 - Carlisle Table. G. King and G. F. Hardy, xxii, 201.
 - Victoria Population Tables, 1871. A. F. BurrIDGE, xxiii, 309.
 - English Life Table, No. 1. A. F. BurrIDGE, xxiii, 309.
 - Brune's Table. Dr. T. Wittstein, xxiv, 153.
 - Government Annuitants' Females Ultimate Table. T. B. Sprague, xxvi, 77.
 - Indian Uncovenanted Service Family Pension Fund Table, Males. A. J. Finlaison, xxviii, 167.
 - New South Wales and Victoria Population Tables, 1891. E. M. Moors and W. R. Day, xxxvi, 158, 175.
 - OTM (Temporary Assurances) Table. W. P. Elderton, xxxvii, 502.
 - O^[ann] and O^[act] Tables. J. Chatham, xxxvii, 526.

GRADUATION. Tables Graduated—*continued.*

— Manchester Unity (1893-1897) (Sickness and Mortality Tables. J. Spencer, xxxviii, 331.

— — OM Table. J. Spencer, xxxviii, 341.

— — OSM Tables. G. F. Hardy, xxxviii, 501.

GRANT (M. D.). Canadian Vital Statistics, with particular reference to the Province of Ontario, xl, 125, 150.

GRAPHIC METHOD. On the Opinion of Dr. Whewell, T. B. Sprague, xxx, 161.
See also Graduation.

GRAUNT (Captain JOHN). References to his Natural and Political Observations, W. R. Wilde, iii, 249; S. Brown, vi, 138; Sir J. W. Lubbock, v, 198; C. Walford, xix, 171.

— Letter on a Statement revived in W. B. Hodge's Paper on Interest, with reference to the Authorship of Graunt's Observations, A. De Morgan, viii, 166. Mr. Hodge's Reply, viii, 231. Reference, F. Hendriks, x, 207.

GRAY (P.). On the Comparative Advantages of the Old and New Methods of Computation, i, 96*.

— On the True Measure of the Probabilities of Survivorship between Two Lives i, 137. Reference, C. Jellicoe, ix, 11.

— On the Doctrine of Successive Lives, ii, 1, 271. Reference, A. De Morgan, iv, 278.

— On a new Expression for the value of the Annual Premium for a Life Assurance, ii, 95.

— On the Construction of Survivorship Assurance Tables, v, 107.

— On the Tables of Single and Annual Assurance Premiums published by the late W. Orchard, and on a Theoretical Table of Mortality proposed by him, vi, 181.

— On Gompertz's Method for the Adjustment of Tables of Mortality, vii, 121. References, T. B. Sprague, ix, 289; W. M. Makeham, xii, 323.

— On certain Statements published by Filipowski in his introduction to his Anti-Logarithmic Tables (as to Mr. Gray's modifications and extension of Gauss's Sum and Difference Logarithmic Tables), vii, 350.

— On the Construction and Use of Commutation Tables for calculating the Values of Benefits depending on Life Contingencies (from the *Mechanic's Magazine*), x, 84, 169, 220. Errata, x, 235.

— On the Significance of the Expression $\frac{1}{1+ax} - (1-v)$, x, 117.

— Another Demonstration of the expressions for the Value of Single and Annual Premiums, x, 238. Reference, Dr. A. Wiegand, x, 286.

— On S. Younger's Plan for the Assurance of Deteriorated Lives, x, 354. Mr. Younger's Reply, xi, 49.

— On the Component Parts of a Terminable Annuity, xi, 172, 240.

— On the Facilities afforded by certain Logarithmic Tables, xi, 230.

— On Makeham's modification of Gompertz's Theory of the Law of Mortality, xi, 236.

— On a Table for the formation of Logarithms and Anti-Logarithms to Twelve places, xii, 71, 121, 212, 252.

— De Moivre's Formula for the value of an Annuity upon (x) in terms of that of the corresponding benefit upon ($x+1$), xii, 176, 232.

— On Milne's Problems XVIII and XXVII, xii, 177.

— On the Comparative Merits of the Old and New Methods of Solution. (Problem—Value of Annuity to y after death of x , if within n years; but to be entered on in n years if either is then alive, and to continue till the death of the survivor), xiii, 60.

— On the Construction of Tables by the Method of Differences, xiii, 61, 149, 293, xiv, 307.

— On the value of Options in Certain Contracts, xiii, 104.

— On an Assurance Fallacy, xiv, 63.

— On the Rate of interest in Loans repayable by Instalments, xiv, 91, 182, 397. References, W. M. Makeham, xiv, 189, xviii, 132; W. Sutton, xvi, 436.

— Solution of Second Year's Examination Questions (1869), xv, 232.

GRAY (P.) — *continued.*

- On the partial Commutation of Premium (in the case of "rated-up" lives), xvii, 224.
- On the Arithmometer of M. Thomas (de Colmar) and its application to the Construction of Life Contingency Tables, xvii, 249, xviii, 20, 123.
- Remarks on a Problem in Life Contingencies (to find Annual Premium for an Annuity on x after y to be returned if x die before y), xxi, 67.
- Method of constructing Life Tables, J. C. Hannyngton, xxi, 455, xxii, 136.
- Calculation of Logarithms to a large number of places by means of Factor Tables. Note on J. W. L. Glaisher's Remarks, xxii, 350. Reference, D. J. McG. McKenzie, xxiii, 418.
- On the Formation of the Values and Amounts of Multiple Annuities, xxiv, 129.
- "Tables and Formulae for the Computation of Life Contingencies, with copious examples of Annuity, Assurance, and Friendly Society calculations", *Review*, i, 101*.
- "Tables and Formulae", D. J. McG. McKenzie, xxiii, 168.
- "Twelve-figure and Twenty-four-figure Tables", D. J. McG. McKenzie, xxiii, 406, xxiv, 243.
- Obituary Notice of, xxvi, 301.

GRAY (P.), SMITH (H. A.) and ORCHARD (W.). "Assurance and Annuity Tables, according to the Carlisle Table of Mortality at 3 per-cent." *Review* by C. Jellicoe, ii, 194.

- GRAY (W. T.).** On J. J. W. Deuchar's paper on Negative Policy Values, xx, 73, 150. Reference, G. King, xx, 148.
- On certain Methods of Valuation, xx, 309.
- On the probable effect of Withdrawals on the Rate of Mortality among Assured Lives, xxiv, 256. References, T. B. Sprague, xxiv, 293; G. H. Ryan, xxvi, 252, xxx, 200.
- On average Rates of Mortality as affected by the grouping of the number exposed to risk at different ages, xxv, 369. References, G. H. Ryan, xxvi, 256; J. Chatham, xxix, 90.

GREECE. See Foreign Intelligence.

GREEK CLERGY, Mortality among, D. A. Bumsted, xxiii, 35.

GREEN (C. H.). On Compensation to Workmen for Accidents, xxxvi, 557.

GRESHAM LIFE OFFICE. Austrian Mortality Experience (1865-1874), F. A. Curtis, xix, 242.

GROUND RENTS, Taxation of, and Enfranchisement of Leaseholds, T. Kyd, xxx, 345; A. W. Tarn, xxx, 405.

GROUPING OF POLICIES FOR VALUATION. F. Schooling, xxxii, 301; H. A. Thomson, xxxiv, 1, xxxviii, 34; G. J. Lidstone, xxxiv, 61, 510, xxxviii, 1, 47, 420; C. H. E. Rea, xxxiv, 105; J. Altenburger, xxxiv, 150, xxxix, 335; W. R. Dovey, xxxiv, 351; G. King, xxxviii, 38, xl, 1; T. G. Ackland, xxxviii, 40, 61; R. P. Hardy, xxxviii, 44; D. C. Fraser, xxxviii, 385; Dr. J. Karup, xxxviii, 431.

GUARANTEED BENEFITS, On the Standard of Solvency in Life Assurance Companies as affected by, G. H. Ryan, xxxii, 25.

— Non-Forfeiture in America, G. H. Ryan, xxxii, 46, 47.

GUINET (—). Notice of his pamphlet as to Assurances on the lives of others, i, 75*.

GUNN (N. B.). Rate of Mortality according to sum assured, xxvi, 274.

GUY (Dr. W. A.). On the Analogy existing between the aggregate effects of the operations of the Human Will and the results commonly attributed to Chance, v, 315. Reference, H. W. Porter, ix, 21.

— Reference to his Mortality of the Peerage, A. H. Bailey and A. Day, ix, 307.

HAINES (R.). Accounts of his statistics as to the Mortality of Natives in India, and Summaries of Mortality Tables, S. Brown, xvi, 200, 213.

HALF-YEARLY AND QUARTERLY ANNUITIES. See Annuities.

HALF-YEARLY AND QUARTERLY PREMIUMS, Valuation of Policies subject to, G. King and T. B. Sprague, xxiii, 256; T. B. Sprague, xxiii, 264. See also Premiums.

HALLEY (Dr. E.). Reprint, from Sherwin's Mathematical Tables, of his paper on Compound Interest, ix, 259.

— An estimate of the Degrees of the Mortality of Mankind, drawn from curious Tables of the Births and Funerals at the City of Breslau; with an attempt to ascertain the price of Annuities upon Lives. Reprinted from the Philosophical Transactions 1693, xviii, 251, 262. References, E. J. Farren, i, 10; F. Hendriks, i, 14*, ii, 255; Dr. Gouraud, ii, 255; Dr. W. Farr, xviii, 261.

HAMILTON (R. C.). See Board of Trade Returns.

HAMMACK (—). Abstract of Census 1861, x, 1.

HANCOCK (W. J.). On the use of the Arithmometer, xvi, 265.

HANNYNGTON (Major-Gen. J. C.). On the adaptation of Assurance Formulas to the Arithmometer of M. Thomas, xii, 184.

— On the use of M. Thomas' (de Colmar) Arithmometer in actuarial and other computations, xvi, 241. Reference, P. Gray, xvii, 249.

— On Gray's Method of Constructing Life Tables, xxi, 455, xxii, 136.

— Obituary Notice of, xxv, 367.

HANOVER LIFE INSURANCE COMPANY. Mortality Experience, 1831-2 to 1864-5, Dr. T. Wittstein, xvii, 426.

HARDING (H. R.). Expenditure in Life Assurance Offices, xxviii, 136. Reference, T. B. Sprague, xxviii, 149.

HARDY (G. F.). On the Mortality observed amongst the various classes of Bonus-Policies in the British Empire Mutual Assurance Company, xxiii, 1. References, G. H. Ryan, xxviii, 224, 226; F. Bell, xxviii, 349, xxv, 239; J. Chatham xxix, 86; G. King, xxix, 179.

— On the Rate of Interest in Annuities-Certain, xxiii, 266.

— An improved method of approximating the Value of Annuities involving three lives, xxiii, 274.

— Improved method of applying Woolhouse's Method of Graduation, xxiii, 351. Errata, xxiii, 464.

— On some Formulas for Approximate Summation, xxiv, 95. References, G. H. Ryan, xxiv, 308; G. King, xxvi, 277; W. Sutton, xxvi, 292; T. G. Ackland, xxvi, 292; W. S. B. Woolhouse, xxvii, 122; F. E. Colenso, xxxi, 346.

— Note on D. J. McG. McKenzie's paper on an Easy Method of Forming Logarithms, xxiv, 252.

— On the Value of the Option of Second Nomination in Reversionary Annuities, xxv, 134.

— The Rates of Mortality among the Natives of India as deduced from the recent Census returns, xxv, 217. References, H. W. Manly, xxv, 241; G. F. Hardy and H. J. Rothery, xxvii, 178; G. H. Ryan, xxxv, 354.

— Example of the use of Double Integration to calculate Assurance Benefits, xxvi, 294.

— Friendly Society Levies, xxvi, 478, xxvii, 303. See also G. King, xxvi, 389.

— A Question in Probabilities (the Average Magnitude of Deviations from Mean Results), xxvii, 214. References, W. M. Makeham, xxviii, 323, 327, 332; H. P. Calderon, xxxv, 167.

— Friendly Societies (Messenger Prize Essay, 1886), xxvii, 245. References, J. A. Higham, xxvii, 247; G. H. Ryan, xxx, 200; Author, xxxii, 375; R. Todhunter, xxxii, 385.

— New Formula of Graduation by Summation, xxvii, 277. Reference, J. A. Higham, xxvii, 427. Of Select Tables, by Makeham's Formula, xxxi, 359, xxxiii, 493.

— Notes on the Use of Scales of Premium reduced in anticipation of future Bonuses, xxxi, 261. Reference, H. Moir, xxxvi, 4, 25, 35.

— On a Method of Computing the Temporary Deductions to be made from the Sums Assured upon Rated-up Lives in lieu of Extra Premium, xxxii, 153.

— Graduation Formulas, xxxii, 371.

— Mortality Experience of Assured Lives and Annuitants in France, xxxiii, 485.

— On the relation between a Temporary Life Annuity and an Annuity-Certain, xxxiv, 85.

— On the correction to be applied to the Valuation of Endowment Assurances in groups, by using the average age, xxxiv, 87.

HARDY (G. F.)—continued.

- On the Compound Survivorship Annuity, xxxiv, 93.
- British Offices' Life Tables, 1893. (Male Participating Assurances). Graduated Rates of Mortality in the form of an Extended Table. Select Net Annual Premiums at 3 per-cent. T. B. Sprague's and O^M Tables compared. Select Policy Values at 3 per-cent, T. B. Sprague's, O^M, and H^M and H^{M(5)} Tables compared. Rates of Mortality (Males and Females) separately and comparatively with H^M and H^{M(5)} Experience, 1863, xxxvii, 175-179.
- British Offices' Life Tables, 1893. Memorandum on the Graduation of the Whole-Life Without Profit Mortality Table, Male Lives, xxxviii, 501.
- Formula for calculating the Force of Interest at which Life Funds are invested, A. G. Mackenzie, xxix, 190.
- Reviews:—
- — Theories of Probability: (1) "On some Fundamental Principles in the Theory of Probability", by G. Chrystal. (2) "On Probability and Chance, and their connection with Insurance", by T. B. Sprague, xxxi, 315.
- — "Friendly Societies' Valuation and other Tables", by W. A. Bowser, xxxiii, 268.
- — Sickness and Mortality Experience of Friendly Societies in England and Wales. Special Report by W. Sutton, xxxiii, 268. Reference, A. W. Watson, xxxv, 286.
- — "The Chances of Death and other Studies in Evolution", by Karl Pearson. (Mortality Tables and Frequency-Curves), xxxiii, 530. Reference, W. P. Elderton, xl, 246.
- HARDY (G. F.) and KING (G.).** On the practical application of Makeham's Formula to the Graduation of Mortality Tables, xxii, 191. References, J. Sorley, xxii, 230, 329; (Editorial), xxiii, 275, 283; G. F. Hardy, xxiv, 100, xxxiii, 488; W. M. Makeham, xxviii, 186; J. Chatham, xxix, 176; G. H. Ryan, xxx, 5; J. Buchanan, xxxvii, 392.
- HARDY (G. F.) and ROTHERY (H. J.).** On the Mortality of Assured Lives in the West Indies (chiefly Barbados), xxvii, 161. References, G. King, xxvii, 218; G. H. Ryan, xxvii, 452, xxx, 7; J. Chatham, xxix, 92; Dr. T. G. Lyon, xxix, 542; G. J. Lidstone, xxx, 213; W. J. H. Whittall, xxxi, 164, 182; T. G. Ackland, xxxiii, 70, 132; A. W. Tarn, xxxiv, 519.
- HARDY (P.).** On the Value of Annuities which are to pay certain given Rates of Interest on the Purchase Money during the whole term of their continuance. and to replace their original Values on their Expiration, at certain other given rates, i, 1*. References, "A Subscriber", i, 101*; (Editorial), i, 102*. See also iii, 341.
- On the Value of Contingent Reversions subject to certain Limitations. Problem I. To determine the present value of a reversion of £1, payable on the death of A, provided he survives another life B, by at least n years. Problem II. To determine the present value of a reversion of £1, payable on the death of A, provided he dies before another life B, or within n years after him, ii, 91. Errata, ii, 298. References, T. B. Sprague, vii, 174; W. C. Otter, vii, 239. See also Contingent Assurances.
- Some Considerations in the Theories of Combinations, Probabilities, and Life Contingencies, ii, 151, 259. See also "Verus", ii, 294.
- An Exposé of the Fallacy "That it is just to tax Temporary Annuities at the same rate as Perpetual Annuities", iii, 195.
- On the approximate values of Annuities on three joint lives, iii, 330.
- Life Tables based on the Experience of the Equitable Society (Table A), namely, l_x , d_x , $\log l_x$, p_x , a_x , A_x , ϖ_x , at 3 per-cent, iii, 366. Reference, W. Morgan, xii, 235.
- Table of Present Value of Annuity-Certain, for any number of years not exceeding 100, at Fractional Rates of Interest, namely: $1\frac{1}{8}$, $1\frac{3}{8}$, $1\frac{5}{8}$, $1\frac{7}{8}$, $2\frac{1}{8}$, $2\frac{3}{8}$, $2\frac{5}{8}$, $2\frac{7}{8}$ per-cent, iv, 383.
- Letter communicating Formula (by A. De Morgan) for an Approximate Value of Annuities at Simple Interest, v, 256.

HARDY (P.)—*continued*.

— An Investigation into the Proper Method of Determining the Amount of an Annuity forborn and Improved at Interest during the existence of a Given Life, vii, 1. Reference, R. Tucker, ix, 259.

HARDY (P.) MEMORIAL FUND. Suggested for the Establishment of Prizes, xi, 114, 358; xii, 241.

— Purchase of Books Reported, xiii, 123.

— Merged into the General Fund, xix, 451.

HARDY (R. P.). Solutions of Second Year's Examination Questions 1869, xv, 232.

— Formula for the Present Value for the Amount to which an Annuity will Accumulate by the End of the Year of Death, xxiii, 244. References, G. King, xxiii, 246, 249; W. Sutton, xxiii, 246.

— On the Formulæ for Determining the Value of Benefits according to the Principle of Collective Assurance, xxx, 79. Reference, A. Hendriks, xxx, 288.

— An Enquiry into the Method of Representing and giving Effect to the Experience of a Friendly Society; with some Account of the Hearts of Oak Benefit Society and its Experience for the years 1884-91, xxxi, 86.

— On a Method of Calculating the Reversionary Bonus attaching to each Policy according to the Principles of Distribution now in force in the Society; being Appendix II to the Opinion of Messrs. Hendriks, Bailey and R. P. Hardy upon the Case submitted to them on behalf of the Australian Mutual Provident Society, dated 11th September 1893, xxxi, 339. Reference, J. Chatham, xxxii, 437.

— On a Method of Valuation that will Produce a Definite Reserve at the end of a Fixed Period, and when the Rate of Interest yielded upon the Accumulations varies Annually throughout such Period, xxxi, 325.

— Statement as to the British Offices' Life Tables 1893, xxxvi, 315.

— Comparison of Full and Truncated Aggregate Tables. British Offices' Experience (Male Participating Assurances, 1893 and Institute of Actuaries' Experience HM and HM⁵, 1863), xxxvii, 147.

— "Valuation Tables." Errata, xviii, 376; P. Gray, xviii, 139; D. Carment, xxii, 369.

— "Old Age Pensioning", &c., Author, xxx, 86.

— Becomes Editor of *Journal*, xxiv, 458. Resignation, xxv, 290.

HARDY (R. P.), BAILEY (A. H.) and HENDRIKS (A.), Appendices to their Opinion upon the Case submitted to them on behalf of the Australian Mutual Provident Society, dated 11 September 1893, xxxi, 325.

HARGREAVE (C. J.). On the Valuation of Life Contingencies by means of Tables of Single and Joint Lives. "To determine the value of an annuity during the continuance of any status which can be made to depend upon the life or death of any number of persons out of the set $A_1, A_2 \dots A_n$ ", iii, 209. Reference, D. Chi-holm, iii, 337.

"**HARPER'S MONTHLY MAGAZINE.**" Extracts from:—

— Does Life Insurance Insure? T. M. Com, xxliii, 128.

— Life Assurance Does Assure, Rev. S. H. Tyng, Jr., xxliii, 139.

HART (J. R.). On the Value of a Postponed Life Interest, xxxii, 55.

— On a Life Interest in an Estate, including a Reversion Expectant on the Death of the Life Tenant in the Estate, xxxii, 460.

— On the Mortality among Government Officials on the West Coast of Africa. Substance of a Paper given in the *Insurance Record*, xxxiii, 307. References, A. E. Sprague, xxxiii, 285; A. Levine, xxxiii, 517.

— On Mortgages of Expectancies under Wills, xxxix, 252.

— Some Aspects of Registration of Title to Land, xl, 246.

HARVEY (C. J.). On a Formula for returning to the Assured their Contributions to the Surplus, compared by numerical examples with the results shown by some of the Methods in use, xxiv, 173. References, A. W. Sunderland, xxvi, 358; Author, xxvi, 383; H. W. Andras, xxxii, 351, 352.

— On an Average Premium, xxiv, 296. Reference Editorial, xxiv, 300.

- HAYTER (W. G.).** Syllabus of Lectures on the Law of Mortgage, xxxv, 489.
 — "The Law of Mortgage", a Course of Lectures. *Review* by J. E. Faulks, xxxvi, 287.
- HEALTH.** Should its state be taken into account in calculating the value of an Interest that depends on the duration of life (reprinted from *Insurance Monitor*, New York, xxiii, 435. *See also* **Dalchosnie Disentail Case and Reversionary Life Interests and Reversions.**
- HEALTHY ENGLISH LIFE TABLE.** Construction of, explained by Dr. W. Farr, ix, 124, 196. Reference, G. King, xix, 395. Columns D, N and S at 3 per cent, W. Davis, x, 59.
- HEARTS OF OAK BENEFIT SOCIETY.** An Account of, and its Experience for the years 1884-1891, R. P. Hardy, xxxi, 86.
- HEIGHT,** In relation to Weight, T. B. Macaulay, xxiii, 62; Anonymous, xxiii, 64; Dr. T. A. Foster, xxv, 253. *See also* **Dr. Hutchinson**, i, 88*.
- HENDERSON (R.).** Uniform Seniority, xxxii, 293.
- HENDRIKS (A.).** Presidential Address (November 1892), xxx, 265. Reference, J. Nicoll, xxxiv, 233.
- HENDRIKS (A.), BAILEY (A. H.) and HARDY (R. P.).** Appendices to their opinion upon the case submitted to them on behalf of the Australian Mutual Provident Society, dated 11 September 1893, xxxi, 325.
- HENDRIKS (F.).** Memoir of the Early History of Auxiliary Tables for the computation of Life Contingencies, i, 1. Reference, I. C. Pierson, xxxiii, 32.
- Supplementary Remarks on Auxiliary Tables for Life Contingencies, including Notice of a recent Table by W. T. Thomson, i, 12*.
- Notice of Sir W. Petty's writings, i, 234.
- Contributions to the History of Insurance, and of the Theory of Life Contingencies, with a Restoration of the Grand Pensionary De Witt's Treatise on Life Annuities, ii, 121, 222, iii, 93. Reference, S. Brown, vi, 137.
- On the first Parliamentary Committee on Insurance, with remarks illustrative of other facts connected with the History of Insurance, iv, 58, 119, 300.
- A review of some recommendations of the Select Committee of the House of Commons on Assurance Associations (1853), iv, 324.
- On the Comparative Value of Gold in different Countries, vi, 176, 177.
- Case Book of John Rowe, of London and Exeter, from 1775 to 1790, edited from the original MS., with an Introductory Notice, vii, 136.
- Translation of E. De Parieu's Account of John De Witt, or Twenty Years' Interregnum in the Stadtholdership of the Seventeenth Century, viii, 205.
- Notes on the Early History of Tontines, x, 205.
- Review:—
- "Mémoires pour servir à l'histoire des Assurances sur la vie et des Rentes Viagères aux Pays-Bas", xxxiv, 386.
- HENRY (Jardine).** On the relation of the Carlisle Table to the Government, the Registrar-Generals, and other Tables of Mortality, xi, 89. Reference, Dr. W. Farr, xi, 109.
- Memoir on Instrument for furnishing the D numbers to four figures each, in Two Joint Life Annuity Tables on any basis, xiv, 212.
- HEPPEL (G. H.).** Notice of him and his logarithmic tables, C. Jellicoe, x, 82.
- HEREDITY OF CONSUMPTION.** F. Eve, xxvii, 156.
- HERIOTS in Copyhold Estates,** T. B. Sprague, xxviii, 64.
- HERSCHEL (Sir J. F. W.).** On the Theory of Probabilities. Being extracts from a review of "Quetelet on Probabilities", which appeared in the *Edinburgh Review* for July 1850, xv, 179.
- HEWAT (A.).** Bonuses. How Earned and How Distributed (an abridgment of a paper read before the Actuarial Society of Edinburgh, 1880), xxii, 286. References, G. H. Ryan, xxiv, 30; C. J. Harvey, xxiv, 173; A. W. Sunderland, xxvi, 357.
- HEWAT (A.) and CHATHAM (J.).** On an Investigation of the Mortality and Marriage Experience of the Widows' Funds of the Scottish Banks, xxxi, 428.
- HEYM (Dr.).** Table of Premiums for a Daily Sick Allowance, viii, 352.

- HEYSHAM (Dr. J.).** "The Life of John Heysham, M.D., and his correspondence with Mr. Joshua Milne relative to the Carlisle Bills of Mortality" (Dr. Lonsdale), *Review*, xvi, 221.
- HIGHAM (C. D.).** On the true measure of the Death Strain on the Funds of a Life Assurance Society, xx, 153. Reference, J. Chatham, xxxii, 397.
- On Claim Acceleration Reserve, xxiv, 76, xxvi, 478. Reference, J. Chatham, xxxi, 151.
- On Woolhouse's Formula for the Adjustment of Tables, xxvi, 50, 478. Reference, R. Todhunter, xxxii, 389.
- A proposal for the amendment of the Law relating to the Assignment of Policies of Life Assurance, xxvi, 325. References, T. B. Sprague, xxvi, 351; Author, xxvi, 354; (Editorial), xxvi, 357, xxvii, 420; W. Hughes, xxvii, 59; W. K. Lemon, xxix, 100; A. W. Tarn, xxxiv, 516.
- On a Long-Lived Family, xxx, 163. References, A. Day, xxx, 264; A. Levine, xxxiv, 588.
- Presidential Address (November 1900), xxxv, 425.
- Speech on the Death of H.M. Queen Victoria, xxxvi, 1.
- Review:—
- Mrs. De Morgan's "Memoir of Augustus De Morgan", xxv, 137.
- HIGHAM (J. A.).** On the value of Selection as exercised by the Policyholders against the Company, i, 179. References, W. Spens, iv, 2, x, 61; W. M. Makeham, xii, 324; T. B. Sprague, xv, 328; G. King, xix, 381, 384; J. Chatham, xxix, 163; R. R. Tilt, xxxii, 3. Demonstration of a formula in this paper, W. Sutton, xv, 158.
- What proportion of my income ought I to save? ii, 297.
- On A. G. Finlaison's Tables for Allowance in Sickness; with Commutation Tables calculated therefrom, vii, 112. Reference, S. Brown, xi, 345.
- On the Value of Selection amongst Assured Lives, and its effect upon the adjustment of a Scale of Premiums as between persons assuring at different ages (Reprint of Paper read in 1850), xx, 1. Reference, G. King, xix, 381, 384.
- Who invented the symbol d_x ? xxi, 297.
- On A. H. Bailey's Paper "On the Pure Premium method of valuation", (extracted from *Insurance Record*), xxii, 43. Reference, S. Day, xxv, 403.
- On the Adjustment or Graduation of Mortality Tables, xxiii, 335, xxiv, 44, xxv, 15, 245. References, D. Carment, xxiv, 224; Author, xxv, 16, 248, xxvi, 324, xxvii, 427, 429, xxxi, 319, 320, 323, 324; C. D. Higham, xxvi, 50; T. B. Sprague, xxvi, 77, 108; J. Chatham, xxix, 106; G. F. Hardy, xxxii, 371.
- On Graduation Formulas, xxvii, 427.
- On the Graduation of Mortality Tables, xxxi, 319. References, A. Levine, xxxii, 290; R. Todhunter, xxxii, 381.
- HILL (G. WOOD).** "On the Law of Real Property in England", a Course of Lectures. *Review* by A. R. Barrand, xxxiv, 392.
- HILLMAN'S** Tables of the Values of Life Assurance Policies. Schedule of 99 errors in them, communicated by S. L. Laundry, ix, 239.
- HISTORY** of Insurance or of the Theory of Life Contingencies, F. Hendriks, i, 1, ii, 121, 222, iii, 93, iv, 58, 119, 300, 349, x, 205; E. J. Farren, i, 40; L. Adles, iii, 64; W. Sutton, xvi, 454.
- HISTORY OF LIFE ASSURANCE.** In the United Kingdom (S. Brown's Prize Essay, 1884, C. Walford, xxv, 114, 207, 257, 433, xxvi, 1, 120, 302, 436.
- In Holland. *Review* by F. Hendriks, xxxiv, 386.
- In Greater Britain, A. W. Tarn, xxxiv, 517.
- HODGE (W. B.).** On the Mortality arising from Naval Operations, vi, 254.
- On the Rates of Interest for the Use of Money in Ancient and Modern Times, vi, 301, vii, 311, viii, 68, ix, 61.
- On the Mortality arising from Military Operations, vii, 80, 151, 201, 275.

HODGE (W. B.)—*continued*.

— Letter on his Statement as to the authorship of Graunt's Observations from A. De Morgan, viii, 166; Mr. Hodge's Reply, viii, 234. Reference, F. Hendriks, x, 207.

— On W. M. Makeham's letter on Three-Life Survivorships, xii, 182.

— Obituary Notice of, xxv, 367.

HODGSON (Rev. J.). Observations on the Mortality of the Clergy of England and Wales. References, W. M. Makeham, xiii, 341; W. A. Bowser, xvii, 328; S. Brown, xvii, 339; F. B. Wyatt, xxviii, 489.

HOFACKER. His Statistics as to ages of Parents and Sex of Children, Quoted by S. Brown, iii, 19; more fully by G. Hopf, iii, 258.

HOLLAND. See Foreign Intelligence.

HOLLERITH ELECTRICAL TABULATING MACHINE, Description of it, G. H. Ryan, xxxvi, 349.

HOLLIDAY (J.). Review:—

— "Elements of Statistics", by A. L. Bowley, xxxvi, 197.

HOMANS (S.). Remarks in connection with the Report of the Committee on Vital Statistics made to the American Life Underwriters' Convention, ix, 235.

— On the Equitable Distribution of Surplus, xi, 121. Editorial Notices of this Method, xiv, 326, xv, 48. References, M. B. Pell, xiv, 384; G. J. Lidstone, xxxii, 75.

— On Governmental Regulation of Life Insurance in the United States of America, xxxiii, 320. Reference, A. W. Tarn, xxxiv, 547.

— Notices of his report on the Mortality Experience of the New York Mutual, S. Brown, viii, 193; C. F. McCay, xvi, 23.

— Obituary Notice of, xxxiv, 144.

HOPF (G.). On the Life Assurance Companies of Germany—their Constitution, Condition, and Prospects (condensed by S. Brown), iii, 134, 220.

— On the Uniform Action of the Human Will, iii, 255. Reference, A. Day, xii, 262.

— On Government Interference with Assurance Companies in Germany, iv, 141.

— Notice of certain frauds in Life Assurance attempted in Germany, v, 160.

— On the Results of the operations of the Gotha Life Assurance Bank for the first 25 years of its existence, particularly with respect to the Mortality amongst the Lives Assured, v, 324, vi, 1. Reference, C. Walford, xix, 189.

— The Life Assurance Companies of Germany—their business and position in the year 1858, ix, 42; in 1870, xvii, 200.

— Suggestions for Legislation to regulate the calculation and investment of the reserve in Life Assurance Companies. Translated by D. A. Bumsted, xv, 270. Reference, T. B. Sprague, xvi, 96.

HOPKINSON (J. C.). Solution of a Problem:—

$$\left[\text{If } \frac{1+a_x}{1+a_{x+1}} > \frac{1+a'_x}{1+a'_{x+1}} > 1, \text{ then will } \frac{a_x}{x(1+a_x)} > \left(\frac{1}{1+a'_x} - \frac{1}{1+a_x} \right) \frac{1}{x-v'} \right]$$

xxv, 277. (See also T. B. Sprague, xxi, 98.)

HORNER'S method of Transformation and of solving Equations. Remarks by P. Gray, xiii, 62. See also W. Orchard, i, 11*.

HOSKINS (H.). Correction of an error in Milne's Annuities and Assurances, xvii, 192.

— On the Approximate value of a Complete Annuity payable by instalments, xix, 143.

HUBBARD (G.). Short notice (translated from *L'Industrie*) of his work, "De l'organisation des Sociétés de prévoyance et des bases scientifiques sur lesquelles elles doivent être établies", iii, 59.

— Account of his "Memoire sur l'histoire et l'organisation des Sociétés de secours mutuels", S. Brown, v, 210.

HUDDE (JOHAN). Notice of his writings, iii, 96.

HUGHES (W.). Some observations on the Life Assurance Clauses of "The Married Women's Property Acts, 1870 and 1882", xxvii, 58. Reference, A. R. Barrand, xxxiii, 222.

— Presidential Address (November, 1902), xxxvii, 361.

- HUIE (D. R. W.).** "On the Valuation of Widows' Funds." Reference, T. B. Sprague, xxii, 78.
- HUMAN LIFE,** Statistics of (being paragraph from a "Weekly Paper", x, 237.
- HUMAN WILL,** On the Uniform Action of the, S. Brown, ii, 341; W. Lazarus, iii, 169; G. Hopf, iii, 255; W. A. Guy, v, 315.
- "Are Events resulting from the exercise of the Human Will suitable for the Deduction of Serviceable Probabilities?" (Correspondence between H. Adan and T. E. Young), xxxiii, 523.
- HUME (A. S.) and STOTT (W.).** Tables for the Valuation of Whole-Term Policies, with limited number of Premiums, HM 3 per-cent, xxxiv, 397-412.
- Annual Premiums, HM 3 per-cent, for Endowment Assurance on Two Joint Lives. Text-Book Graduation, xxxvi, 393-398.
- On the Calculation of Contingent Assurance Premiums, when Makeham's Law holds, xxxix, 370.
- HUMPHREYS (G.).** On the Practice of the Eagle Company with regard to the Assurance of Lives classed as Unsound, and on the Rates of Mortality prevailing among the Lives so classed, assured during the 63 years ending 30 June 1871, xviii, 178.
- HUMPHREYS (G.) and WILLIAMS (J. H.).** Translation of Dr. M. Kammer's article "On the Determination of the Average Risk attaching to the grant of Insurance upon Lives", xiv, 439.
- HUMPHREYS (N. A.).** The recent decline in the English Death-Rate, and its effect upon the duration of life reprinted from the *Journal of the Statistical Society*, June, 1883, xxvii, 486. References, G. King, xxviii, 216; (Editorial), xxix, 29.
- HUNTER (A.).** The effect of using the Lapse Element in Calculating Premiums and Reserves, xxxvi, 51.
- HUTCHINSON (Dr.).** Table of Normal weight for various heights, i, 88*.
- HUTCHESON (W. A.).** American Valuation Tables, xxxvii, 91.
- HUYGENS (C.).** Historical Notices of, F. Hendriks, i, 19; S. Brown, vi, 136.
- "**HYGIENE; or, THE HANDBOOK OF HEALTH**" (H. W. Lobb). Review by H. W. Porter, vi, 110.
- HYPOTHETICAL METHOD OF VALUATION.** See C. Jellicoe, iii, 185, x, 328; R. Tucker, x, 312; T. B. Sprague, xi, 90, xvi, 234; G. King, xx, 264.
- Policy Value by, H. C. Thiselton, xxviii, 487.
- See also Valuation of Life Policies (Re-assurance Method).
- HYPOTHETICAL TABLE OF MORTALITY** formed by assuming constant addition of 1 per-cent to HM 3 per-cent premiums, On Extra Risks considered in relation to a, G. H. Ryan, xxiv, 19.
- HUSBANDS AND WIVES,** Age at Marriage of, A. F. BurrIDGE, xxv, 104.
- Relative Ages of, Where Marriage is fruitful, J. Chatham, xxvii, 37.
- HUSBANDS, WIDOWERS AND BACHELORS** in England and Wales, G. King, xxx, 293.
- IMPAIRED LIVES.** See Under-Average Lives.
- IMPERIAL FORCES,** Mortality Experience of the, during the war in South Africa, 1899 to 1902, F. Schooling and E. A. Rusher, xxxvii, 545.
- INCOME.** What proportion of my Income ought I to save? J. A. Higham, ii, 297.
- INCOME TAX.** In Saxony, E. A. Masius, ii, 70; In Prussia, E. A. Masius, ii, 293.
- On the Inequitable Operation of the Property and Income Tax Enactments, as regards Life and other interests, C. Jellicoe, ii, 213.
- On the true measure of Liability in a System of Direct Taxation, C. Jellicoe, iii, 1.
- On, J. Hill Williams, iii, 168; C. D. Higham, xxxv, 413.
- An Exposé of the Fallacy "That it is just to Tax Temporary Annuities at the same rate as Perpetual Annuities", P. Hardy, iii, 195.
- Correspondence between the Treasury and the Associated Scottish Life Offices on the operation of the Income Tax Enactment, as regards any abatement on payment of Single Premiums, iv, 239.

INCOME TAX--*continued*.

- Its Incidence on Assurance Companies. A. H. Bailey, xxv, 314; B. Newbatt, xxviii, 280. Reference, T. B. Sprague, xxviii, 310.
- Last *v.* London Assurance Corporation, xxv, 327.
- Styles *v.* New York Life Insurance Company, xxvii, 32. Remarks, G. H. Ryan, xxvii, 30.
- Clerical, Medical and General Life Assurance Society *v.* Carter, xxviii, 101.
- Gresham Life Assurance Society *v.* Styles, xxx, 318, 320. Reference, T. G. Ackland, xxxi, 81.
- On Annuities, T. G. Ackland, xxxi, 81.
- On Annuities-Certain, A. Fraser, xxxiv, 102.
- In a Mutual Fire and Life Office, H. A. Thomson, xxxv, 36.
- Liability of Life Assurance Companies to pay upon Income arising from Investments in Foreign Countries. Legal Decisions, xxxvii, 402; J. E. Faulks, xxxviii, 311.
- As affecting Life Offices, J. E. Faulks, xxxviii, 297.
- Allowance for, as affecting the Value of a Life Interest, G. King, xxxviii, 344.

INCOME TAX ACT (Schedules of), 1853, xxviii, 287.**INCREASED MORTALITY.** Its effect on Policy Values, T. B. Sprague, xxi, 77. References, J. Meikle, xxiii, 385; J. C. Hopkinson, xxv, 277.**INCREASE OF CANCER.** R. Teece, xxxvi, 89; Dr. A. Newsholme, xxxvi, 113.

— On the Alleged, G. King and Dr. A. Newsholme, xxxvi, 120.

INCREASING ANNUITIES AND ASSURANCES. On the Approximate Calculation of the Values of, G. J. Lidstone, xxxi, 68.**INCREASING REVERSIONARY CHARGES.** W. B. Paterson, xxxv, 245.**INDEPENDENT ORDER OF ODDFELLOWS, MANCHESTER UNITY.** Sickness and Mortality Experience, 1893-1897, A. W. Watson. *Review* Editorial, xxxviii, 369.**INDEX OF LIVES ASSURED.** On the best method of constructing an, F. A. Curtis, viii, 54.**"INDEX TO JOURNAL".** Volumes I-X (C. Jellicoe and J. Nicholson), xi, 358, xii, 241.

— Volumes I-XX, T. B. Sprague, xxiv, 149.

— Volumes XXI-XXX, G. H. Ryan. Announcement of Publication, xxxiii, 57.

— Volumes I to XX and XXI to XXX, Errata and Misprints, xxxvii, 544.

— Announcement of the completion of the Card Index, xxxvi, 400.

INDIA. Mortality among European Troops 1840-1848—Parliamentary Return, i, 79. In Bombay 1841-1848, from the *Bombay Times*, i, 80. In Madras 1842-1851, W. H. Seales, v, 245.

— Census of Bombay (1849), i, 83.

— Rates of Premium Charged for Residence in, vi, 18. (Military Officers), C. Jellicoe, i, 166; W. M. Makeham, xiv, 164, 242.

— Notice of Statistics compiled by Davies, Francis, Woolhouse, Neison, *Calcutta Review*, 1855, vi, 24.

— Marriage Rate among Europeans in, S. Brown, xi, 1, xii, 276; J. Meikle, xix, 281; T. B. Sprague, xix, 295.

— Rates of Mortality among Europeans in, S. Brown, xi, 1, xii, 276; J. Meikle, xix, 281; T. B. Sprague, xix, 295.

— Rates of Mortality among Natives in, S. Brown, xvi, 187; G. F. Hardy, xxv, 217.

— Tables deduced from S. Brown's Indian Experience, H. A. Smith, xviii, 372.

— The Effect of the Indian Coinage and Paper Currency Act, 1893, A. J. Finlaison, xxxi, 413.

— The Work and Development of Life Assurance Companies in, A. W. Tarn, xxxiv, 525.

See also Colonial Intelligence and Mortality (2), East Indies.

INDIAN CIVIL SERVICE. Government Regulations 1855 for the Examination of Candidates for the Appointments to the Civil Service of the East India Company, &c., v, 258.**INDIAN COINAGE AND PAPER CURRENCY ACT, 1893.** Reference, A. J. Finlaison, xxxi, 413.

- INDIAN GOVERNMENT ESTABLISHMENTS.** Correspondence with the Census Office and the India Office, relative to the tabulation and publication of certain Statistics of the, xxxvi, 401.
- INDIAN LIFE OFFICES,** *The Calcutta Review* on the Prospectuses of the, vi, 15.
- INDIA OFFICE,** Correspondence with the, relative to the tabulation and publication of certain Statistics of the Indian Government Establishments, xxxvi, 401.
- INDISPUTABILITY OF POLICIES.** H. C. Thiselton, xxxi, 36. Reference, A. H. Bailey, xxxi, 59.
- INDUSTRIAL ASSURANCES (Whole-Life).** Valuation, with Allowance for Lapses, T. G. Ackland and J. Bacon, xxxviii, 539.
- INDUSTRIAL INSURANCE.** On some Methods of Grouping Policies for Valuation, F. Schooling, xxxii, 301.
- Some Observations on, C. H. E. Rea, xxxiv, 105.
- In Canada, A. W. Tarn, xxxiv, 538.
- On the Valuation of Policies with allowance for Lapses, T. G. Ackland and J. Bacon, xxxviii, 539.
- INDUSTRIAL INSURANCE COMPANIES,** Position of, W. Sutton, xxvii, 416.
- "INDUSTRIAL INVESTMENT AND EMIGRATION"** (A. Scratchley). *Review*, i, 360.
- INFANCY AND CHILDHOOD,** Observations on the Rate of Mortality in, A. Buchanan, vi, 67; H. W. Porter, ix, 155; L. Oplerman, xvi, 315; W. A. Bowser, xvii, 26.
- INFANT MORTALITY IN SCOTLAND,** Dr. W. Robertson, xxii, 140.
- INFLUENZA.** Sickness and Mortality Statistics collected from the Hearts of Oak Benefit Society for the period 1884-1891, including two years of the epidemic, R. P. Hardy, xxxi, 115, 114.
- INNKEEPERS, PUBLICANS, and other Persons** engaged in the Sale of Intoxicating Liquors, On the Mortality among, J. Stott, xx, 35. *See also* xxi, 178, xxxiii, 245, 252.
- INSANITY STATISTICS IN SCOTLAND,** Sir A. Mitchell, xxviii, 426, 432.
- INSOLVENT LIFE OFFICES.** (Editorial, xv, 388; T. B. Sprague, xvi, 77, xx, 291; A. H. Bailey, xvi, 389, xxix, 526, xxxii, 52; G. King, xxix, 523; R. P. Hardy, xxix, 532; H. W. Manly, xxxii, 50.
- Liquidation of, D. Pitcairn, xv, 385; T. B. Sprague, xvi, 229. Extract from C. J. Bunyon's Pamphlet, xx, 281. On Valuation of Policies for Proof in, C. J. Bunyon, xvii, 1, xviii, 32; Legal Decisions, xvii, 2, xviii, 34, 41.
- Articles from the New York "Spectator": "How to Wind-up an", xx, 289. "What to do with Insolvent Life Companies", xx, 439. Reference, G. H. Ryan, xxxii, 35.
- Valuation of Policies in, from the New York "Spectator", xxiii, 306. Note (Editorial), xxiii, 398.
- Crawley's "Law of Life Insurance", Buckley's Comment hereon, G. H. Ryan, xxiv, 136.
- In Friendly Societies, W. P. Pattison, xxv, 36.
- Reconstruction of, by Reduction of Contracts, T. B. Sprague, xxv, 73.
- On certain methods of Reconstructing an Insolvent Life Assurance Company, G. H. Ryan, xxxii, 33.
- In the United States. Extract from Paper read before the Actuarial Society of America, H. W. Smith, xxxii, 33.
- S. Homans' Device for making up reserves by advance-notes from the Policy-holders. Reference, G. H. Ryan, xxxii, 35.
- INSTALMENTS,** Annuities and Premiums payable by. *See Annuities and Premiums.*

INSTANT OF DEATH. The Value of a Reversion payable at the, E. J. Farren, iii, 234, 335; H. Filipowski, iii, 336; D. Chisholm, iv, 70; S. Younger, vii, 238.

— Carlisle's per-cent Tables of Single and Annual Premiums for Assurances payable at the, (1) by Milne's formula, D. Chisholm, iv, 89; (2) by Sang's, D. Chisholm, iv, 91.

— Bailey's Value for an Assurance payable at the, M. N. Adler, xii, 271.

INSTITUTE OF ACTUARIES.

Proceedings:—

1849-50, i, 103; 1850-51, i, 121*, 264, 365; 1851-52, ii, 302, 395, iii, 88; 1852-53, iii, 275, 364, iv, 85; 1853-54, iv, 274, v, 90; 1854-55, v, 275, 362, vi, 58; 1855-56, vi, 179, 238; 1856-57, vii, 117; 1857-58, vii, 356; 1858-59, viii, 120, 180, 239; 1859-60, viii, 360, ix, 59, 115; 1860-61, ix, 299, 367; 1861-62, x, 180, 239, 298; 1862-63, x, 360, xi, 112; 1863-64, xi, 299, 356; 1864-65, xii, 239; 1865-66, xiii, 120; 1866-67, xiii, 252, 384; 1867-68, xiv, 331; 1868-69, xv, 160; 1869-70, xv, 455; 1870-71, xvi, 304; 1871-72, xvii, 143; 1872-73, xvii, 450; 1873-74, xviii, 298; 1874-75, xix, 145; 1875-76, xix, 451; 1876-77, xx, 304; 1877-78, xxi, 215; 1878-79, xxii, 67; 1879-80, xxii, 304; 1880-81, xxiii, 72; 1881-82, xxiii, 380; 1882-83, xxiv, 146; 1883-84, xxiv, 456; 1884-85, xxv, 287; 1885-86, xxvi, 71; 1886-87, xxvi, 402; 1887-88, xxvii, 236; 1888-89, xxviii, 79; 1889-90, xxviii, 407; 1890-91, xxix, 261; 1891-92, xxx, 178; 1892-93, xxx, 570; 1893-94, xxxi, 401; 1894-95, xxxii, 139; 1895-96, xxxiii, 51; 1896-97, xxxiii, 426; 1897-98, xxxiv, 295; 1898-99, xxxv, 70; 1899-1900, xxxv, 400; 1900-01, xxxvii, 304; 1901-02, xxxvii, 334; 1902-03, xxxviii, 189; 1903-04, xxxviii, 681; 1904-05, xxxix, 400; 1905-06, xl, 389.

Annual General Meetings:—

1851, i, 365; 1852, ii, 90; 1853, iv, 85; 1854, v, 90; 1855, vi, 58; 1856, vi, 238; 1857, vii, 118; 1858, vii, 358; 1859, viii, 239, 360; 1860, ix, 117; 1861, ix, 368; 1862, x, 298; 1863, xi, 113; 1864, xi, 357; 1865, xii, 240; 1866, xiii, 122; 1867, xiii, 385; 1868, xiv, 333; 1869, xv, 162; 1870, xv, 457; 1871, xvi, 306; 1872, xvii, 145; 1873, xvii, 452; 1874, xviii, 300; 1875, xix, 147; 1876, xix, 453; 1877, xx, 306; 1878, xxi, 217; 1879, xxii, 69; 1880, xxii, 305; 1881, xxiii, 73; 1882, xxiii, 381; 1883, xxiv, 148; 1884, xxiv, 457; 1885, xxv, 289; 1886, xxvi, 72, 155; 1887, xxvi, 408; 1888, xxvii, 242; 1889, xxviii, 85; 1890, xxviii, 413; 1891, xxix, 267; 1892, xxx, 185; 1893, xxx, 576; 1894, xxxi, 409; 1895, xxxii, 148; 1896, xxxiii, 52; 1897, xxxiii, 434; 1898, xxxiv, 303; 1899, xxxv, 78; 1900, xxxv, 408; 1901, xxxvi, 313; 1902, xxxvii, 342; 1903, xxxviii, 197; 1904, xxxviii, 689; 1905, xxxix, 408; 1906, xl, 397.

Reports of Council:—

1851, i, 368; 1852, iii, 90; 1853, iv, 85; 1854, v, 90; 1855, vi, 58; 1856, vi, 238; 1857, vii, 118; 1858, vii, 358; 1859, viii, 239; Auditor's, do, viii, 360; 1860, ix, 117; 1861, ix, 368; 1862, x, 298; 1863, xi, 114; 1864, xi, 357; 1865, xii, 240; 1866, xiii, 122; 1867, xiii, 386; 1868, xiv, 333; 1869, xv, 162; 1870, xv, 457; 1871, xvi, 306; 1872, xvii, 145; 1873, xvii, 452; 1874, xviii, 300; 1875, xix, 147; 1876, xix, 453; 1877, xx, 306; 1878, xxi, 217; 1879, xxii, 69; 1880, xxii, 305; 1881, xxiii, 73; 1882, xxiii, 381; 1883, xxiv, 148; 1884, xxiv, 457; 1885, xxv, 289; 1886, xxvi, 72; 1887, xxvi, 403; 1888, xxvii, 237; 1889, xxviii, 80; 1890, xxviii, 408; 1890-91, xxix, 262; 1891-92, xxx, 179; 1892-93, xxx, 571; 1893-94, xxxi, 403; 1894-95, xxxii, 140; 1895-96, xxxiii, 52; 1896-97, xxxiii, 427; 1897-98, xxxiv, 296; 1898-99, xxxv, 71; 1899-1900, xxxv, 401; 1900-01, xxxvi, 305; 1901-02, xxxvii, 335; 1902-03, xxxviii, 199; 1903-04, xxxviii, 682; 1904-05, xxxix, 402; 1905-06, xl, 390.

INSTITUTE OF ACTUARIES—*continued.***Examinations:**

Names of Successful Candidates.

1850, i, 109; 1851, i, 369; 1852, iii, 275; 1853, iv, 275; 1854, v, 275, 6; 1855, vi, 179; 1856, vii, 117; 1857, vii, 357; 1858, viii, 180; 1859, ix, 59; 1860, ix, 300; 1861, x, 180; 1862, no list; 1863, xi, 300; 1864, xii, 239; 1865, xiii, 120; 1866, xiii, 384; 1867, xiv, 332; 1868, xv, 161; 1869, xv, 156; 1870, xvi, 304; 1871, xvii, 144; Correction of list for 1871, xvii, 221; 1872, xvii, 450; 1873, xviii, 299; 1874, xix, 146; 1875, xix, 152; 1876, xx, 305; 1877, xxi, 216; 1879, xxii, 70; 1880-79, xxii, 73; 1880, xxii, 306; 1881, xxiii, 71; 1882, xxiii, 382; 1883, xxiv, 150; 1884, xxiv, 458; 1885, xxv, 290; 1886, xxvi, 74; 1887, xxvi, 405; 1887 (October), xxvii, 239; 1888 (April), xxvii, 239; 1888 (October), xxviii, 82; 1889 (April), xxviii, 83; 1889 (October), xxviii, 112; 1890 (April), xxviii, 412; 1890 (October), xxix, 265; 1891 (April), xxix, 265; 1891 (October), xxx, 183; 1892 (April), xxx, 183, 188; 1892 (October), xxx, 571; 1893, xxx, 574, 580; 1894, xxxi, 406, 412; 1895, xxxii, 143, 152; 1896, xxxiii, 55, 61; 1897, xxxiii, 430, 440; 1898, xxxiv, 299, 309; 1899, xxxv, 74, 83; 1900, xxxv, 104, 415; 1901, xxxvi, 308, 321; 1902, xxxvii, 340; 1903, xxxviii, 195; 1904, xxxviii, 687; 1905, xxxix, 406; 1906, xl, 395.

Questions set:—

1850, i, 111; 1851, ii, 195; 1852, iii, 273; 1853, iv, 272; 1854 (second year's), v, 178; 1856 (third year's), vi, 113; 1859, Extracts, viii, 359; 1860 (second and third year's), ix, 301; 1872 (second and third year's), xvii, 458; 1873 (first and second year's), xviii, 376; 1876, xx, 137; 1877, xxi, 221; 1879, xxii, 63; 1880, xxii, 298; 1881, xxiii, 66; 1882, xxiii, 374; 1883, xxiv, 138; 1884, xxiv, 419; 1885, xxv, 278; 1886, xxvi, 60; 1887, xxvi, 393; 1887 (October), xxvii, 223; 1888 (April), xxvii, 226; 1888 (October), xxvii, 430; 1889 (April), xxviii, 72; 1889 (October), xxviii, 254; 1890 (April), xxviii, 398; 1890 (October), xxix, 78; 1891 (April), xxix, 252; 1891 (October), xxix, 550; 1892 (April), xxx, 168; 1892 (October), xxx, 340; 1893, xxx, 560; 1894, xxxi, 388; 1895, xxxii, 126; 1896, xxxiii, 39; 1897, xxxiii, 414; 1898, xxxiv, 282; 1899, xxxv, 58; 1900, xxxv, 386; 1901, xxxvi, 291; 1902, xxxvii, 320; 1903, xxxviii, 176; 1904, xxxviii, 668; 1905, xxxix, 388; 1906, xl, 375.

Editorial Remarks:—On their Institution, i, 110; To consist of three parts (1851), ii, 195.

Solutions of questions put at the Examinations, H. W. Porter (1856), i, 123*, ii, 197; T. B. Sprague, Second Year's Questions (1860), x, 45; 1861-2-3, xiii, 253; 1864-5-6, xiv, 147; Correction of Error, M. N. Adler, xiv, 242; Second Year's, P. Gray and R. P. Hardy (1869), xv, 232.

Syllabus (1853), plan of Third Year's Examination, iv, 274.

Revised Syllabus, 1860, ix, 115; 1898, xxxiv, 417; 1904, xxxviii, 703.

Revised Rules, 1890, xxviii, 395; 1893, xxx, 164; 1898, xxxiv, 414; 1904, xxxvi, 205; 1906, xl, 312.

Alteration of Date from December to April, xxi, 221.

List of Members who have passed the Examinations, 1850-79 inclusive, xxii, 73.

Errata in Names of Successful Candidates (April 1885), xxv, 368; in Names of Examiners (October, 1888), xxvii, 512.

Appointment of Prof. S. L. Loney, M.A., as Examiner for Part I, xxxi, 85, 407.

Increase in the number of Papers, and in the time allowed for answering questions set in Parts II, III, and IV, xxxviii, 702.

Questions, 1902, 1903, 1904 reprinted. Announcement of Publication, xxxix, 126.

Colonial Examinations (1892), Announcement of Decision of Council to hold, xxix, 251. Extension of, G. H. Ryan, xxxii, 39.

INSTITUTE OF ACTUARIES—*continued*.

Presidential Addresses :—

1880, A. H. Bailey, xxii, 381; 1881, A. H. Bailey, xxiii, 157; 1882, T. B. Sprague, xxiv, 1; 1883, T. B. Sprague, xxiv, 229; 1884, T. B. Sprague, xxv, 65; 1885, T. B. Sprague, xxv, 293; 1886, A. Day, xxvi, 161; 1887, A. Day, xxvii, 1; 1888, W. Sutton, xxvii, 319; 1889, W. Sutton, xxviii, 169; 1890, B. Newbatt, xxix, 1; 1892, A. Hendriks, xxx, 265; 1894, A. J. Finlaison, xxxi, 413; 1895, A. J. Finlaison, xxxii, 233; 1896, T. E. Young, xxxiii, 97; 1897, T. E. Young, xxxiii, 453; 1898, H. W. Manly, xxxiv, 317; 1899, H. W. Manly, xxxv, 97; 1900, C. D. Higham, xxxv, 425; 1902, W. Hughes, xxxvii, 361; 1904, H. Cockburn, xxxix, 1.

Prizes :—

Messenger, 1859 (Subject : Methods of Distributing Surplus), viii, 240.
 — — Awarded to W. P. Pattison, ix, 341.
 — — 1868, Syllabus of (Subject : A Comparison of the Values of Policies as found by means of various Mortality Tables and the different Methods of Valuation in use among Actuaries), xiv, 305.
 — — — Awarded to H. W. Manly, xiv, 334.
 — — 1869 (Subject : Legislation in reference to Life Assurance and Life Assurance Companies), xv, 163.
 — — 1871 (Subject : Surrender-Values of Policies), xvi, 308.
 — — 1878, Syllabus of (Subject : Surrender-Values of Policies), xxi, 220.
 — — — Awarded to G. S. Crisford, xxii, 71.
 — — 1886, Syllabus of (Subject : Friendly Societies), xxvi, 226.
 — — — Awarded to G. F. Hardy, xxvii, 159.
 — — 1895 (Subject : On the Books and Forms to be used in scheduling the particulars of the risks of a Life Assurance Company, &c.). Awarded to J. Chatham, xxxiii, 57.
 — — 1901, Syllabus of (Subject : The Reserves and Surrender-Values in respect of Endowment Assurances, according to the different Methods and bases of Valuation in common use), xxxvi, 87.
 — — 1905, Syllabus of (Subject : The Methods of ascertaining the Rates of Mortality amongst the General Population of a Country, District, or Town, or amongst different classes of such Population, by means of Returns of Population, Births, Deaths and Migration), xxxix, 127.
 — — Legacy, Notice of, vi, 239.
 — — — Interest on, to be devoted to the purchase of Prizes for Essays, vii, 359.
 Hardy (P.) Memorial Fund, Suggested for the establishment of Prizes, xi, 114, 358.
 — — Purchase of Books reported, xii, 241.
 — — Merged into the General Fund, xix, 454.
 Offered by the Council (1867), (Subject : Comparison of the Values of Policies as determined by the use of different Tables of Mortality), xiii, 386.
 M. N. Adler's, 1879, Conditions of, xxi, 22.
 S. Brown's, Fund Established, xv, 459.
 — — 1883, Syllabus of (Subject : History of Life Assurance in the United Kingdom), xxiv, 145.
 — — Award : 1st Prize, C. Walford, 2nd Prize, E. A. Rusher, xxiv, 458.
 — — 1892, Syllabus of (Subject : Enfranchisement of Leaseholds and the Taxation of Ground Rents, &c.), xxix, 479.
 — — — Awarded to T. Kyd and A. W. Tarn equally, xxx, 182.
 — — 1899, Syllabus of (Subject : Actuarial Aspects of Legislation on the subject of Compensation to Workmen for Accidents), xxxiv, 594.
 — — — Awarded to J. Nicoll, xxxv, 488.
 T. B. Sprague's, 1887, Syllabus of (Subject : Equitable Distribution of Profits of Mutual Life Offices), xxvi, 387.
 — — — Prize not awarded, xxvii, 243.

INSTITUTE OF ACTUARIES. Prizes—continued.

- T. B. Sprague's, 1889, Prize renewed. (Subject: Examination of Published Experience of Life Offices to determine Rate of Mortality among Select Lives, and how affected by Discontinuance), xxviii, 82.
- — — Syllabus and Conditions of, xxviii, 167.
- — — Award: 1st Prize, J. Chatham, 2nd Prizes, P. L. Newman and E. McClintock, xxviii, 414.
- J. Chisholm's, 1896, Syllabus of (Subject: The Relation of the Actuarial Profession to the State), xxxiii, 204.
- — — Awarded to J. Nicoll, xxxiv, 101.
- — — 1899, Syllabus of (Subject: Rationale of Discounted Bonus Premiums), xxxiv, 595.
- — — Award: 1st Prize, H. Moir, 2nd Prizes, H. E. W. Lutt and J. Mayhew Allen, xxxv, 406. Reference (Editorial), xxxv, 414.

Life Tables:—

- Monetary Tables. Announcement of Publication, xv, 457.
- W. S. B. Woodhouse, xv, 396, 406; M. B. Pell, xxi, 137; T. B. Sprague, xxi, 452; R. Teece, xxii, 251; A. Hendriks, xxx, 266; R. R. Tilt, xxxii, 1.
- HMF⁽³⁾, W. A. Bowser, xvi, 149.
- HMF Table, adjusted by Makeham's formula. Interest 3 and 4 per-cent, S. Brown, xvi, 429.
- Observations on the Mortality of the "year 0", W. Sutton, xvi, 76; T. B. Sprague, xx, 98.
- On their use in finding the Values of an Annuity on the last Survivor of three lives, W. Godward, xvii, 266; E. Smyth, xvii, 379.
- Misprints in, xix, 228.
- HM Table, W. T. Gray, xxiv, 263.
- HM⁽⁵⁾ Table, T. B. Sprague, xxi, 229 (unadjusted with Numbers at Risk and Deaths), xxix, 59; W. T. Gray, xxiv, 283; W. M. Makeham, xxviii, 187, 189.
- HM⁽⁴⁻⁴⁾ Table, R. Teece, xxii, 256; W. T. Gray, xxiv, 283; G. H. Ryan, xxvi, 252.
- DMF Table, G. King, xxiv, 411; F. Schooling, xxix, 440.
- Select, by T. B. Sprague, Construction of, xxi, 229, xxii, 391; Use of, xxii, 407. Announcement of Publication, xxxiii, 432. Reference, F. W. Fulford, xxxv, 217.

Mortality Experience, 1863:—

- Method of Deducing the Exposed to Risk, G. H. Ryan, xxv, 383, xxvi, 256; G. King, xxvii, 218; J. Chatham, xxix, 100; T. B. Sprague, xxxi, 217.
- Reference, W. J. H. Whittall, xxxi, 175.
- Existing at close of Observations, R. R. Tilt, xxxii, 1.
- Table of Complete Expectation of Existence, xxxii, 6.
- Table of Temporary Expectation of Existence, xxxii, 8.
- Table of New Business of Contributing Offices, xxxii, 12, 13.

Text Book (Part I), by W. Sutton, Announcement of its completion, xxiv, 149.

- Errata, xxv, 63. Reference, G. J. Lidstone, xxxiii, 413.
- — — New Edition, by R. Todhunter. *Review* by A. Levine, xxxvi, 385.
- — — Errata, xxxviii, 99.
- (Part II), by G. King, Announcement of publication, xxvii, 238.
- — — Errata, Author, xxvii, 120, xxviii, 160, xxix, 80.
- — — References, T. G. Ackland, xxvii, 158; W. Sutton, xxvii, 350; Report of Council, xxvii, 238; W. M. Makeham, xxviii, 154; G. J. Lidstone, xxviii, 250; H. C. Threlton, xxviii, 487; T. J. Searle, xxx, 557; H. N. Sheppard, xxxii, 458; I. C. Pierson, xxxiii, 34; R. Todhunter, xxxiii, 317; H. P. Calderon, xxxv, 159.
- — — Translation into French by MM. Bégault, Le Jeune and Mahillon, xxx, 576. Announcement of publication, xxxii, 145.
- — — Second Edition, by G. King. *Review* by R. Todhunter, xxxvii, 104.

INSTITUTE OF ACTUARIES— *continued.*

Lectures, For Second year's Examination, by W. Sutton, xvi, 431.

— "On the Law of Real Property in England", by G. Wood Hill. *Review* by A. R. Barrand, xxxiv, 392.

— "The London Daily Stock and Share List", by George Clare. *Review* by A. R. Barrand, xxxiv, 394.

— Syllabus of, "On the Companies Acts", by A. C. Clauson, xxxiv, 418. *Review* of the Lectures by W. O. Nash, xxxv, 49.

— Syllabus of, "On the Law of Mortgage", by W. G. Hayter, xxxv, 489. *Review* of the Lectures by J. E. Faulks, xxxvi, 287.

— On the Actuarial Subjects of Parts III and IV of the Examinations, by G. King (*Notice*), xxxix, 413. Syllabus for latter half of the Course 1905-06, xl, 124.

Library, Additions to, 1848-49, i, 104; 1850-51, i, 121*, 264, 365-7; 1851-52, ii, 395, iii, 88; 1894-95, xxxii, 226; 1895-96, xxxiii, 62; 1896-97, xxxiii, 441; 1897-98, xxxiv, 310; 1898-99, xxxv, 90; 1899-1900, xxxv, 417; 1900-01, xxxvi, 322; 1901-02, xxxvii, 348; 1902-03, xxxviii, 202; 1903-04, xxxviii, 695; 1904-05, xxxix, 414; 1905-06, xl, 403.

— Offer of Francis Baily's Manuscripts accepted, iv, 275.

— Notices of Publication of Catalogues, v, 275, xxxii, 145.

— Establishment of Library Fund, xxviii, 82. Absorption of it, xxxv, 403.

— Rules for its Regulation, xxxv, 155.

See also xxvi, 248.

List of Members, 1851, i, 268; Corresponding Members, 1851, ii, 302; 1893, Erratum, xxxi, 160; 1898, xxxiv, 316; 1899, xxxv, 97; 1900, xxxv, 425; 1902, xxxvi, 409; 1903, xxxvii, 453; 1904, xxxviii, 296; 1905, xxxix (follows contents); 1906, xl (follows contents).

— Probationers, Regulations for the Class of, 1898, xxxiv, 418.

— Remarks as to the Institute and its Journal (quoted from the article in the "Encyclopædia Britannica"), T. B. Sprague, xx, 118.

— "Journal of the Institute." "Index to First Twenty Volumes", T. B. Sprague. References, Report of Council, xxiv, 149, 150; T. B. Sprague, xxiv, 14.

— — Card Index. Announcement of its completion, xxxvii, 400.

— — Indexes to Vols. I—XX and XXI—XXX. Errata and Misprints, xxxvii, 544.

— — Back Numbers in print, xxxvii, 627-8.

— Extracts from the "Revue des Assurances", i, 262, ii, 100.

— Account of Proceedings at a General Meeting (1851) of English and Foreign Representatives of Assurance Interests, i, 368. Ditto, Dinner at Richmond, i, 379.

— Its objects and progress (Editorial Articles), i, 114, 119*, 262, 364, ii, 101.

— Mathematical Professorship. Sketch of a plan (1852) for the establishment of, iii, 272.

— Resolutions (1853) as to legislation, iii, 365. Reference, C. Jellicoe, iv, 31.

— Constitution and Laws. Alterations in, vi, 60, vii, 119, xv, 165, xvii, 456, xix, 150.

— Data collected with a view to determine the Rates of Premium for the Assurance of Lives of persons residing in foreign climates or engaged in pursuits attended with extra risk, vii, 131.

— Report to the International Statistical Congress (1860) as to the objects of, S. Brown, x, 114.

— A Suggestion towards adding a new feature of usefulness to, C. Walford, xxii, 1.

— Foundation of, A. H. Bailey (Presidential Address), xxii, 381; T. E. Young, xxviii, 436; Extract from *Athenæum*, xxx, 344. Reference (Editorial), xxx, 343.

— Memoirs of C. Jellicoe (President), xxiv, 17; W. B. Hodge (President), xxv, 367; J. Hill Williams (President), xxvi, 218.

— Review of Past History (Presidential Address), T. B. Sprague, xxiv, 1.

— History of, J. Nicoll, xxxiv, 165.

INSTITUTE OF ACTUARIES—*continued.*

- Royal Charter of Incorporation, xxv, 1. References, Report of Council, xxv, 289; T. B. Sprague, xxvi, 156.
- Position of the Profession under the Charter (Official), xxvi, 228.
- Bye-Laws under Charter, xxvi, 229.
- Jubilee Address to H.M. Queen Victoria, xxvi, 386. Reference, xxvi, 408. Diamond Jubilee Address, xxxiii, 370. Speech by the President, C. D. Higham, on her death, xxxvi, 1. Memorial to H.M. King Edward VII on her death, xxxvi, 3.
- Removal of Head Quarters to Staple Inn Hall, xxvi, 406.
- Proposal for Collecting New Experience of British Companies, W. Sutton, xxviii, 86; A. E. Molyneux, xxviii, 251; A. Hendriks, xxx, 269, xxxi, 85.
- New Bye-Laws, xxviii, 489.
- Memorial to the President of the Local Government Board, as to the Taking of the Census in 1901, xxxv, 362. Correspondence with the Registrar-General as to that census, xxxvii, 317–319.
- Actuarial Valuations of Reversions for Estate Duty under “The Finance Act, 1894”, with Correspondence, xxxvi, 81–84.
- Offer of Actuarial Advice by the President and Council of the Institute, in connection with the Funds under the control of the Royal Commissioners of the Patriotic Fund; also correspondence relative thereto, xxxvi, 85–87, 400, xxxvii, 446. Further Correspondence and Valuation Reports, xxxvi, 402, xxxvii, 446, xxxviii, 379, xxxix, 380, 383.
- Correspondence with the Census Office and the India Office, relative to the tabulation and publication of certain Statistics of the Indian Government Establishments, xxxvi, 401.
- Bust of T. B. Sprague placed in the Hall. Announcement by the President, C. D. Higham, xxxvii, 111.

See also Journal of the Institute.

INSTITUTE OF ACTUARIES (French). B. Newbatt, xxix, 4.

INSTRUCTIONS TO AGENTS, Form of, (in Ireland) in 1725, xxviii, 218.

INSURABLE INTEREST in Life Assurance. *See* Guinet, i, 75*; G. Ross, ii, 282; A. H. Bailey, iv, 368, v, 168; Editorial Note, v, 170; “Verus”, v, 77; W. K. Lemon, xxix, 383.

INSURANCE. *See* Assurance.

“**INSURANCE**—A practical exposition for the student and the business man” (T. E. Young). *Review* (Editorial), xxxviii, 375.

INSURANCE AGAINST ISSUE. *See* Issue and Issue Insurances.

INSURANCE AGAINST SICKNESS, German Law of, P. Köhne, xxix, 220.

“**INSURANCE GUIDE AND HANDBOOK.**” Second Edition. (C. Walford.) *Review*, xiv, 409.

INSURANCE INSTITUTE OF NEW SOUTH WALES, Address to, by D. Carnent, xxx, 219.

“**INSURANCE MONITOR**” (New York), **Extracts from:**—

— What is a Policy Legally Worth to the Insured? xxii, 132. Reference, “Spectator” (New York), xxiii, 307.

— The Logic of an Unfortunate Experience (Moral Hazard in Insurance), xxiii, 222.

— Should the State of Health be taken into account in Calculating the Value of an Interest that Depends on the Duration of Life? xxiii, 435.

INSURANCE PRESS. Its Position in Relation to Insurance Offices and Insurance Interests, C. Walford, xxiii, 18.

“**INSURANCE RECORD**”, **Extracts from:**—

— On the Measure of Expenses in Life Assurance Companies, T. B. Sprague, xix, 167.

— Pure Premium Method of Valuation, J. A. Higham, xxii, 43.

— Frauds in Life Assurance (Correspondence), xxii, 180.

— Abstract of Report of the Royal Commission on Friendly Societies, xxv, 36.

— Expected Deaths and Claims, N. B. Gumm, xxvi, 274; G. H. Ryan, xxvi, 275.

— Expenditure in Life Offices, T. B. Sprague, xxviii, 149.

— Income Tax, T. B. Sprague, xxviii, 314.

"INSURANCE RECORD", Extracts from—continued.

— The Treatment of the Discontinuances in the British Offices' Experience (1863-1893), G. H. Ryan, xxxi, 309, 313; J. Chatham, xxxi, 310; T. B. Sprague, xxxi, 311.

— T. G. C. Browne's Method of Division of Profits, xxxii, 194.

— On the Mortality among Government Officials on the West Coast of Africa, J. R. Hart, xxxiii, 307.

"INSURANCE TIMES" (New York), Extract from:—

— Does a Large New Business Benefit the Policyholders of a Life Company? xviii, 335.

"INSURANT", "INSUREE." Terms proposed (Registrar-General's Twelfth Annual Report) to denote respectively the Person in whose favour a Policy is granted, and the Person whose life is Insured, Dr. W. Farr, iv, 267, xix, 434.

"INSURER." Misuse of the Term, H. W. Manly, xxxv, 99.

INTEGRAL CALCULUS. On its Application to Interest Questions, E. J. Farren, i, 92*, 355, v, 254.

— On its use in determining Averages, and Application to Life Contingencies, S. Younger, vii, 71.

INTEGRATION by means of Selected Values of the Function, W. S. B. Woolhouse, xxvii, 122.

— (Double), Example of the Use of, to Calculate Assurance Benefits, G. F. Hardy, xxvi, 294.

— (Mechanical), A. W. Sunderland, xxvi, 299.

See also **Summation.**

INTEREST. Value of Annuities to yield one Given Rate to a Purchaser, and to replace the Original Value at another Given Rate, P. Hardy, i, 1*.

"A Subscriber", i, 101*. Editorial Note, i, 102*.

— On the Equivalence of Compound Interest with Simple Interest paid when due, A. De Morgan, i, 335.

— Force of, at which Life Funds are Invested, G. F. Hardy's Formula for calculating the, A. G. Mackenzie, xxix, 190.

— A Method of finding the actual yield on a stock sold at a Premium, including the Increase in Capital Value, D. C. Fraser, xxxiv, 497.

— (**Rate of**). On the Probable future Rate, W. T. Thomson, i, 375. Extracts from his suggestions in regard to the Regulations of the Rate of Interest on Landed Securities, v, 45. *See also* **T. B. Sprague**, xxv, 79.

— Approximation to, in an Annuity, E. Ryley, i, 332; C. W. Merrifield, iii, 324; J. Meikle, iv, 134, v, 152; A. De Morgan, viii, 61; J. J. McLanchlan, xviii, 290; W. Sutton, xix, 77. Ditto, in a Life Annuity, J. Meikle, v, 152. Ditto, in Annuities-Certain, G. F. Hardy, xxiii, 266; D. J. McG. McKenzie, xxiii, 405; S. W. Newling, xxxvii, 437; J. Spencer, xxxviii, 280. Yielded by a Bond for 1, bearing Interest at i per annum for n years, and purchased for $1+p$; "M", vi, 54; R. Todhunter, xxxiii, 356. Reference, W. Sutton, xix, 80.

— In Ancient and Modern Times, W. B. Hodge, vi, 301, vii, 311, viii, 68, ix, 61.

— In Loans payable by Instalments, P. Gray, xiv, 91, 182, 397; W. M. Makeham, xviii, 135.

— Yielded by Foreign Government Loans, W. Sutton, xix, 77.

— Relation between the Value of a Policy and, W. G. Walton, xxii, 135.

— Decline of, on Life Insurance Investments, "Spectator" of New York, xxiii, 436.

— In 1837, and from 1865-1886, on Life Insurance Funds, D. Deuchar, xxviii, 449.

— Various considerations affecting, A. J. Finlaison, xxxi, 421.

— In Canada, G. H. Ryan, xxxii, 42.

— Some considerations in reference to the fall in, experienced in the past, and the probability of its continuance, J. Burn, xxxiv, 474.

— Yielded by the Funds of Life Assurance Companies in the Colonies, A. W. Tam, xxxiv, 532.

INTEREST (Rate of)—*continued*.

- — Average, C. D. Higham, xxxv, 439.
- — Average, realised by the principal British Life Offices, H. Moir, xxxvi, 13, 14.
- — Variations in, and their effect upon Pure Premium Policy-Values, G. J. Lidstone, xxxix, 209.

INTEREST ACCOUNTS, A Query by A. De Morgan, x, 281. Letter from A. H. Turnbull, x, 357.

INTEREST AND ANNUITIES, On the Demonstration of Formulae connected with, A. De Morgan, iv, 277.

INTEREST, Insurable. *See Insurable Interest*.

INTEREST QUESTION, The, H. Filipowski, iii, 338, iv, 243; Anonymous, iv, 72, 253; B. Gompertz, iv, 245.

INTEREST QUESTIONS, On the application of the Differential and Integral Calculus to, E. J. Farren, v, 254.

INTEREST (Surplus). *See Bonus*.

INTEREST TABLES, Smart's, R. Wilding, xxii, 129.

INTERESTS (Life). *See Reversionary Life Interests and Reversions*.

INTERNATIONAL ACTUARIAL CONGRESSES.

- First, Brussels, 1895. Official Representatives of the Institute of Actuaries, xxxii, 146.
- — An Account of the Proceedings, A. J. Finlaison, xxxii, 233.
- Second, London, 1898. Announcement of date, xxxiii, 432.
- — *Review* of Proceedings, R. Todhunter, xxxv, 135.
- Third, Paris, 1900. Programme and Regulations, xxxv, 84.
- — Arrangements for, xxxv, 241.
- — An Account of the Proceedings, C. D. Higham, xxxv, 426.
- Fourth, New York, 1903. Programme, xxxvii, 442.
- — Remarks, W. Hughes, xxxviii, 296.
- Fifth, Berlin, 1906. Remarks (Editorial), xl, 416.
- Errata in Names of Permanent Committee of, xxxii, 392.

INTERNATIONAL STATISTICAL CONGRESSES.

- First, Brussels, 1853. Preliminary Notice, iv, 52; Report of its Proceedings, S. Brown, iv, 93, v, 25.
- Second, Paris, 1855. Short account of its Objects, vi, 159; Dr. W. Farr's paper on the Great Powers, vi, 147; S. Brown on their Proceedings as to decimal measures, &c., vii, 38, viii, 158, 161.
- Fourth, London, 1860. Report made to it by S. Brown as to the objects of the Institute of Actuaries, x, 114. *See also* ix, 369.
- — B. Gompertz's Paper on one Uniform Law of Mortality from Birth to extreme Old Age; and on the Law of Sickness, xvi, 329.
- Fifth, Berlin, 1863. Report by S. Brown as to its Proceedings, xi, 195.
- Sixth, Florence, 1867. Report by S. Brown as to its Proceedings, xiv, 165, xv, 21.
- Seventh, The Hague, 1869. Translation of paper by M. von Baumhauer on the Method of Constructing Tables of Mortality, xvi, 34.

INTERPOLATION. *See* J. Meikle, vi, 200; Dr. W. Farr, ix, 135; F. Maurice, xiv, 1; G. W. Berridge, xiv, 244; T. Carr, xiv, 479; L. Oppermann, xv, 145, 177; P. Gray, xiii, 61, 149, 293, xiv, 307.

- Summation, and the adjustment of Numerical Tables, W. S. B. Woolhouse, xi, 61, 301, xii, 136.
- Mouton's Method, F. Maurice, xiv, 1.
- Briggs's Method. Remarks thereon by F. Maurice, xiv, 1. Remarks in reply (Editorial), xiv, 88.
- — Translation of the 13th chapter and part of the 12th of the preface to the *Aritmetica Logarithmica* of H. Briggs, J. Hill Williams, xiv, 73. Correction of misprints in this translation, L. Oppermann, xv, 312.
- — Translation of Legendre's paper giving demonstrations of Briggs's formulas, J. Hill Williams, xiv, 84.
- Formula for bisection of an interval, W. M. Makeham, xiv, 243. *See also* B. Gompertz.

INTERPOLATION—*continued*.

- Of functions of one, two, or three variables, W. M. Makeham, xvi, 98.
- On a Method of interpolating the values of premiums when these are given only for certain intervals of age, D. J. A. Samot, xx, 347; D. Carment, xxi, 243.
- With Central Differences, W. S. B. Woolhouse, xxi, 62.
- New Formulas for, M. B. Pell, xxi, 273; T. B. Sprague, xxii, 270; A. W. Sunderland, xxvi, 363; J. D. Everett, xxxv, 452.
- Sang's formula for $(l_{35-x} - l_t = Bt^2 + Ct + \&c.)$, J. Meikle, xxiii, 394.
- Lagrange's Formula, G. F. Hardy, xxiv, 105.
- On some practical applications of simple Interpolation Formulæ, T. G. Ackland, xxxii, 286.
- The Employment of, in Statistics, H. Westergaard. Translated and abridged by D. A. Bumsted, xxxii, 276.
- Central Difference Formulæ, J. Spencer, xxxiii, 349.
- The use of Quadrature Formulæ and other Methods of Approximation for the Calculation of Survivorship Benefits, J. Buchanan, xxxvii, 384.
- By Finite Differences (Two Independent Variables), H. H. Edwards, xl, 289.
- Two-Variable, J. Spencer, xl, 293.

See also Differences and Finite Differences.

- INVALIDITY** (or permanent incapacity for work). On Dr. Heym's table of probability, W. Lazarus, viii, 355. On Dr. A. Wiegand's tables for Assurance against the risk of, W. Lazarus, xv, 143.
- New Formula for the Calculation of Probabilities of, D. J. A. Samot, xxi, 288.

- On the German Law against, T. E. Young, xxix, 269.

INVALID LIVES. On the Practice and Experience of the Clerical, Medical and General Life Assurance Society, G. H. Pinckard, i, 273.

- On a method of estimating the increase of Rate put on Endowment Assurances to meet deterioration, H. A. Smith, x, 120.
- On a plan (Morrice Black's) for making payment of extra premium on them conditional, S. Younger, x, 268. References, Sir E. W. Brabrook, x, 349; P. Gray, x, 354; H. A. Smith, x, 352, xi, 180. Reply by Mr. Younger, xi, 49.
- Value of policy on, Dr. A. Wiegand, xv, 28; J. Sorley, xx, 342. *See also J. R. Macfadyen*, xvii, 77.
- On the means of dispensing with Extra Premiums for Deteriorated Health, W. M. Makeham, xvii, 153. *See also P. Gray*, xvii, 224.
- On the Experience of the Eagle Insurance Company with regard to the Insurance of, G. Humphreys, xviii, 178.

See also Under-Average Lives.

INVERSE PROBABILITIES, Theory of, W. M. Makeham, xxix, 242, 444, 476; E. L. Stabler, xxx, 240; G. F. Hardy, xxxi, 315.

- Applied to Rates of Mortality, G. F. Hardy, xxxv, 193.

INVESTMENT OF FUNDS of Assurance Companies, S. Brown, vii, 241; A. H. Bailey, x, 142; T. B. Sprague, xvii, 229; A. G. Mackenzie, xxix, 185; A. R. Barrand, xxxiv, 421.

- On the Purchase of Life Assurance Policies as an Investment, A. Day, viii, 396; C. R. V. Coutts, xl, 328, 330.

- On Railway Debenture Stock considered as a Security for, J. Coles, xv, 1.

- Reversionary Securities as Investments, C. R. V. Coutts, xl, 317.

INVESTMENTS IN FOREIGN COUNTRIES, Liability of Life Assurance Companies to pay Income Tax upon. Legal Decisions, xxxvii, 402, 411, 427, 428; J. E. Faulks, xxxviii, 311.**"INVESTORS' REVIEW."** Reference, B. Newbatt, xxxi, 12, 24.**IRELAND.** Life Assurance in, Form of Instructions to Agents (1725), xxviii, 218.**IRISH CENSUS (1851).** Extract from the *Athenæum* as to its results, i, 354.**ISSUE AND ISSUE INSURANCES**, On, R. Tucker, v, 350.

- On the Determination of Rates of Premium for, A. Day, viii, 127.

- On the Marriage Statistics of the Peerage, with reference to the Calculation of premiums for, A. Day, x, 181.

- On the Statistics of Second Marriages among the families of the Peerage, A. Day, xii, 185.

ISSUE AND ISSUE INSURANCES—*continued.*

- On their use in securing advances on reversions, C. J. Bunyon, xviii, 9.
- Table showing certain particulars as to the Issue Insurances granted by British Life Offices (prepared from the Board of Trade Returns), T. B. Sprague, xx, 152, xxiii, 220, xxvi, 391, xxix, 548; D. M. Carnment, xxxi, 386; M. M. Lees, xxxiv, 593, xxxix, 119.
- On the Rate of Premium for an Insurance against the Contingency of a Bachelor of a given age leaving issue, T. B. Sprague, xxi, 406.
- On the probability that there will hereafter be Issue of a Marriage hitherto childless, T. B. Sprague, xxii, 117.
- Probability that a Marriage entered into by a man above forty will be fruitful, T. B. Sprague, xxii, 359.
- On the Calculation of Benefits that depend on Death without issue, T. B. Sprague, xxiv, 327.
- Probability that a Marriage entered into at any age will be fruitful, T. B. Sprague, xxv, 160, xxvii, 195.
- Premiums for Assurance against Issue, to widowers, bachelors and married men. Calculation of Values of Benefits depending on Marriage and Issue, T. B. Sprague, xxviii, 350. *See also* J. Chatham, xxviii, 354.
- Correlation between Duration of Life and the number of Offspring, Miss M. Beeton, G. U. Yule and Karl Pearson, xxxv, 458.

ITALY. *See* Foreign Intelligence.

- IVORY (Holmes).** On the method of approximating to the values of Deferred and other Life Annuities when payable Half-yearly and Quarterly, iv, 291. References, T. Carr, vii, 110; T. B. Sprague, xv, 129; W. Evans, xix, 12.

- JAMAICA.** On the Rate of Mortality among Europeans and their Descendants in the Island of, with table containing \bar{e}_x , p_x , q_x , l_x , $\log l_x$, $\log p_x$, and A_x , a_x , π_x , at 3 and 4 per-cent, J. Marshall, iv, 39.

See also Colonial Intelligence and Mortality (2).

- JELlicoe (C.).** On the Rates of Premium to be charged for Assurances on lives of Military Officers serving in Bengal, i, 166. References, E. J. Farren, v, 194; *Calcutta Review*, vi, 24n, 28; J. Meikle, vi, 202; S. Brown, xi, 8.
- On the proper allowance to be made for the Surrender of Policies of Assurance, i, 279.
- On the Determination and Division of Surplus, and on the Modes of returning it to the Contributors, i, 22*, 159. References, T. B. Sprague, vii, 62; R. Tucker, ix, 245; J. Terry, x, 133n; A. J. Finlaison, xxxii, 108.
- On the Contrivances required to render Contingent Reversionary Interests Marketable Securities, ii, 159. References, C. G. Shaw, ii, 295; R. Tucker, v, 240; T. B. Sprague, xiv, 419; J. R. Macfadyen, xvii, 386.
- On the extra premiums charged for Assurance of the lives of persons going abroad, ii, 166.
- Life Assurance in England (1851), ii, 171, iii, 33, x, 272.
- On the Inequitable Operation of the Property and Income Tax Enactment as Regards Life and other Interests; and on the Principles by which Direct Taxation should be regulated, ii, 213. Reference, P. Hardy, iii, 195.
- On the conditions which give rise to Surplus in Life Assurance Companies, and on the amount of the Return or "Bonus" which such conditions justify, ii, 333.
- On the true measure of Liability in a System of Direct Taxation, iii, 1.
- On the Objectionable character of certain methods very generally adopted for the Determination and Division of Surplus in Life Assurance Companies, iii, 185. References, H. Tuckett, iii, 290; R. Tucker, x, 317; H. W. Manly, xiv, 260; T. B. Sprague, xv, 413.
- On the Rates of Mortality prevailing amongst the male and female Lives assured in the Eagle Insurance Company during the 44 years ending 31 December 1851, iv, 199. References, S. Brown, iv, 283; C. Walford, xix, 187; J. Chatham, xxix, 97; W. J. H. Whittall, xxxi, 170; On the graduation formula used in this paper, W. Sutton, xviii, 375.

JELlicoe (C.)—*continued.*

- On the relation which should obtain between the amount assured upon Lives, and the sum reserved at the Expiration of Given Terms to meet it, v, 100.
- An examination of the objections urged (by J. W. Rathbone, F. J. Minasi, and others) against the plan of Decimal Coinage proposed by the Royal Commissioners and by the Select Committee of the House of Commons, v, 293. Letter from Mr. Minasi, vi, 57. Editorial Note, vi, 57.
- On the Valuation of Property held for Life and in Reversion; and on the due Apportionment of it, when so held on the same Life, between the Tenant for Life and the Remainderman, vi, 61. Observations, H. Wilbraham, vi, 211. Editorial Notes, vi, 212, 215. References, A. Baden, xvi, 269; T. B. Sprague, xviii, 77.
- On the Data collected by the Council of the Institute with a view to determine the Rates of Premium for the Assurance of the Lives of Persons residing in Foreign Climates, or engaged in pursuits attended with Extra Risk, vii, 131.
- On the Principles which should govern Assurance Companies in Amalgamating, vii, 254. References, T. B. Sprague, vii, 355; R. Tucker, x, 317.
- On the Casualties to which Contracts of Life Assurance are liable, viii, 241.
- On the Rationale of Certain Actuarial Estimates, viii, 310. References, A. Day, viii, 326; J. R. Macfadyen, xvii, 390.
- On the Methods pursued in Valuing the Risks of Life Assurance Companies, and on the Division of Surplus, x, 328.

Editorial Remarks:—

- — Demonstration of the formula for Endowment-Assurance Annual and Single Premiums, i, 332.
- — On C. Gill's method of Determination of Surplus, i, 359.
- — On the subject of P. Hardy's paper (i, 1*) on the Value of Annuities, &c., i, 102*.
- — On H. Tompkins's paper on the Laws of Sickness and Mortality, iii, 15.
- — The Life Assurance Controversy (1853), iii, 216.
- — On modes of Valuation (quoting H. Tuckett's opinion), iii, 289.
- — On the result to be expected when a dynamically true coin is tossed many times in succession, iii, 326. Reference, W. J. Reynolds, iv, 65.
- — On the Report from the Select Committee (1853) on Assurance Associations, iv, 31, 131.
- — Approximate method of finding the premium for an Assurance on one life against another and for n years longer, iv, 134.
- — On S. Younger's method of Determination of Surplus, iv, 250.
- — On the amount of Reserve made by Life Assurance Companies. Table of amount per-cent reserved by 13 Offices, v, 51.
- — Demonstration of formula for A_x , $\left[\frac{1 - ia_x}{1 + i} \right]$, v, 52.
- — Demonstration of formulas for amount and value of annuity-certain, v, 155.
- — On A. H. Bailey's letter on the Interest in Assurances on the Life of another, v, 170.
- — On the premiums required for Life Assurance, when Interest is allowed to the assured upon them, v, 348; P. Gray, xiv, 63.
- — Table showing the relative intensity of diseases amongst the Lives Assured in the Eagle Company, compared with that affecting the general population of London, v, 349.
- — An article as to the prospectuses of the Indian Life Offices (containing remarks as to the proper loading that should be added to premiums in order to meet contingencies), vi, 44.
- — The Money Market, vi, 45.
- — On F. J. Minasi's paper on Decimal Coinage, vi, 57.
- — By what means is the Status of a Profession to be improved? vi, 72.
- — On the modern method of valuation in Life Assurance Companies, vi, 74.

JELlicoe (C.). Editorial Remarks *continued.*

- — The question whether profits are capital or interest, vi, 101.
- — Should not the additions to a Policy, as well as the sum assured, be charged with extra premium when extra risk is incurred? vi, 101.
- — Comparative value of Gold in different countries, vi, 101.
- — Note on E. J. Farren's improved method of Life Contingency Calculations, vi, 105.
- — On F. Hendriks's letter as to the comparative value of Gold in different countries, vi, 176, 178.
- — Mismanagement of Joint Stock Companies, vii, 175.
- — On C. A. M. Willich's article (vii, 273) on Annuities on Lives, vii, 274.
- — On J. Meikle's letter on D. Chisholm's commutation tables (explaining objections to grant of increasing assurances), vii, 300.
- — Forms of Endorsement on Policies used in the practice of Life Assurance, viii, 24.
- — On the Principles which should regulate the reinsurance of risks, viii, 96.
- — On the proposed legislation for the Regulation of Insurance Companies, viii, 101.
- — As to the first American Life Underwriters' Convention, viii, 268, ix, 234.
- — On E. Réboul's new method of calculating the value of a Survivorship Assurance (*Assurance au survivant désigné*), ix, 1.
- — Notice of G. H. Heppel and his Logarithmic Tables, x, 82.

Review:—

- — Gray, Smith and Orchard's Assurance and Annuity Tables, ii, 194.
- — Extract from his Lecture to the Institute, P. Hardy, i, 3*.
- — Retirement from Presidentship and from the Editorship of the *Journal*, xiii, 386.
- — Memoir of, xxiv, 17.
- — Reference to his services as Editor of the *Journal*, xxiv, 150.

JEWS (in Austria), Mortality among. T. B. Sprague, xxvii, 155.

JOINT ENDOWMENT ASSURANCES.

- Single and Annual Premium for four-life case, D. Walker, xxv, 136.
- (1) Annual and Single Premiums, $HM\ 2\frac{1}{2}$ per-cent, (2) Values of $\log D_{xx}$, $\log N_{xx}$, and a_{xx} , $HM\ 2\frac{1}{2}$ per-cent, J. McDonald, xxxii, 447.
- Approximate Calculation of Net Premiums for, G. J. Lidstone, xxxiii, 354.
- Annual Premiums, $HM\ 3$ per-cent, A. S. Hume and W. Stott, xxxvi, 393-398; $HM\ 4$ per-cent, G. J. Lidstone, xxxiii, 356.
- The Application of Lidstone's Method to their Valuation, T. G. Ackland, xxxviii, 40, 61.

JOINT LIFE ANNUITIES. *See Annuities.*

JOINT LIFE ANNUITY TABLES. On an Instrument for Furnishing the D Numbers, to four figures each, J. Henry, xiv, 212.

JOINT LIFE TABLES (Government Annuitants, 1884). Announcement of Publication, xxxii, 145.

JOINT LIVES, On the valuation of Life Contingencies by means of Tables of, C. J. Hargreave, iii, 209.

- Approximate Values of Annuities on Three, P. Hardy, iii, 330.
- Formula for the Annual Premium for a Term Assurance on Two, T. B. Sprague, viii, 59; W. C. Otter, viii, 113.
- Premiums for Extra Risks under, G. H. Ryan, xxiv, 309; G. F. Hardy, xxiv, 323.
- On some Methods of grouping Policies for the purpose of Valuation, F. Schooling, xxxii, 307.
- On the Generalisation of Simpson's Rule for Annuities on, R. Henderson, xxxii, 293; J. M. Allen, xxxiii, 535; A. Levine, xxxiii, 538; J. Govan, xxxiv, 147.

JOINT STOCK COMPANIES, On the Mismanagement of, C. Jellicoe, vii, 175.

JONES' (DAVID) Work on Annuities, Certain Formule in it, J. R. Macfadyen, xiii, 200; C. McCuaig, xiii, 251.

— Reference to the Formule given therein for the rate of Interest in an Annuity, J. J. McLauchlan, xviii, 294.

JOPLING (R. T.). Statistics of Suicide, i, 308, ii, 32. Reference, G. Hopf, vi, 11.

JOURNAL OF THE INSTITUTE. Name first adopted, iii, 91. Reference, T. B. Sprague, xx, 118, xxiv, 14.

— Index to Vols. I to X, C. Jellicoe and J. Nicholson, xi, 358, xii, 241.

— "Index to the First Twenty Volumes", T. B. Sprague, xxiv, 149.

— Indexes to Vols. I to XX and XXI to XXX, Errata and Misprints, xxxvii, 511.

— Card Index, Announcement of its completion, xxxvi, 400.

— Back Numbers in Print, xxvii, 627-8.

See also **Institute of Actuaries**. For list of *Honorary Editors and Sub-Editors*, see p. viii.

JUDICATURE ACT, 1873. Reference, W. K. Lemon, xxix, 403.

KANNER (Dr. M.). On the determination of the Average Risk attaching to the Grant of Insurance upon lives. Translated by T. B. Sprague, xiv, 439.

— On his Theory for the Adjustment of Mortality Tables, W. Lazarus, xvi, 424.

KARUP (Dr. J.). The Amendment of the Basis of Calculation of the Gotha Life Office, *Review* by T. E. Young and W. R. Strong, xxxviii, 373.

— Formula for valuing Policies in Groups according to Exact Duration, xxxviii, 431.

KELLER (Dr. L. J.). Report on the Sickness from Small-Pox among the Employees of the Austrian State Railway Company. Translated, and the Argument examined, by T. B. Sprague, xx, 222.

KING (G.). On the Mortality among Assured Lives and the Requisite Reserves of Life Offices. Part I, Statistical, xix, 381. Part II, Financial, xx, 233. References, W. Sutton, xx, 209; W. T. Gray, xx, 314, 326; R. R. Tilt, xxxii, 4, 16; G. J. Lidstone, xxxii, 77, 86; Author, xxxvii, 453, xl, 2; D. C. Fraser, xxxviii, 386.

— On J. J. W. Deuchar's paper on Negative Policy-Values, xx, 148.

— On the Determination of an Average Life Office, xx, 300.

— On the Analogy between an Annuity-Certain and a Life Annuity, xx, 435.

— On a General Expression for the Value of an Annuity on the last r survivors of m lives $-(a_{\overline{mxyz\dots um}|})$, xxii, 293.

— On Reversionary Annuities, xxii, 296.

— Formulas for checking Tables of Annuities-Certain, xxiii, 186.

— On the Method used by Milne in the Construction of the Carlisle Table of Mortality, xxiv, 186. References, A. F. BurrIDGE, xxiv, 339; F. E. Colenso, xxxi, 315.

— On Benefits payable fractionally throughout the year and on Complete Annuities, xxiv, 418, xxv, 156.

— On the numerical calculation of the Values of Complex Benefits, by means of Formulas of Approximate Summation, xxvi, 276. References, W. S. B. Woolhouse, xxvii, 122; A. W. Sunderland, xxvii, 509; F. E. Colenso, xxxi, 346.

— Friendly Society Levies, xxvi, 389. Reference, G. F. Hardy, xxvi, 478.

— On a New Formula for Deducing the "Exposed to Risk" from the Records of a Life Assurance Company, xxvii, 218. References, J. Chatham, xxix, 92; W. J. H. Whittall, xxxi, 184; T. G. Ackland, xxxiii, 70, 133, 134, 362; J. Burn, xxxiii, 278.

— On Legislation affecting Life Assurance Companies, more especially with reference to Life Assurance Companies' Acts, 1870-72, and their Amendment, xxix, 481. References, D. Carment, xxx, 234; A. Hendriks, xxx, 277; J. Chatham, xxxii, 417; G. J. Lidstone, xxxiv, 62; R. Todhunter, xxxv, 4; W. O. Nash, xxxv, 53.

— On Family Annuities, xxx, 291. References, Author, xxxi, 472; R. Todhunter, xxxv, 356; J. Nicoll, xxxvi, 501, 505.

— On the Rate of Mortality amongst the Female Nominees of the General Annuity Trust Fund during the period from 1 January 1869 to 31 December 1895, xxxiii, 262.

KING (G.)—*continued.*

- On the Comparative Reserves of Life Assurance Companies according to various Tables of Mortality, at various Rates of Interest, xxxvii, 453. References, D. C. Fraser, xxxviii, 412, xl, 123; Author, xl, 2; T. G. Ackland, xl, 49.
- On Staff Pension Funds, xxxix, 129; Erratum, xxxix, 336. References, E. C. Thomas, xxxix, 206; G. J. Lidstone, xxxix, 208.
- On the Valuation in Groups of Whole-Life Policies by Select Mortality Tables, xl, 1. Reference, D. C. Fraser, xl, 122.
- Model Office. Reserves by British Offices' Life Tables, 1893, compared with other Standards, xxxvii, 187.
- On the Value in Practice of a Life Interest, allowing for Income Tax, xxxviii, 311.
- Translation of A. Bégault's Report "On the Necessity for a Universal Notation", xxxiii, 1.
- Editorial Remarks:—
- Revised Rules and Syllabus for Institute Examinations, xxxiv, 413.
- Text Book, Part II, Announcement of Publication, xxvii, 238. References, A. Day, xxvii, 242; W. M. Makeham, xxviii, 154; G. J. Lidstone, xxviii, 250, xxxi, 70; I. C. Pierson, xxxiii, 34.
- Letter on, and Errata, Author, xxviii, 160.
- Second Edition. *Review* by R. Todhunter, xxxvii, 104.
- Announcement of Appointment as Honorary Editor of the *Journal*, xxxiii, 432. Resignation, xxxix, 406.
- KING (G.) and HARDY (G. F.).** On the Practical Application of Makeham's Formula to the Graduation of Mortality Tables, xxii, 191. References, J. Sorley, xxii, 230, 329; (Editorial), xxiii, 275, 283; G. F. Hardy, xxiv, 100, xxxiii, 488; W. M. Makeham, xxviii, 186; J. Chatham, xxix, 176; G. H. Ryan, xxx, 5; J. Buchanan, xxxvii, 392.
- KING (G.) and NEWSHOLME (Dr. A.).** On the alleged Increase of Cancer. (Paper read before the Royal Society, 4th May 1893, and extracted by permission from the "Proceedings of the Royal Society"), xxxvi, 120.
- KING (G.) and SPRAGUE (Dr. T. B.).** On the Valuation of Policies subject to Half-yearly and Quarterly Premiums, xxiii, 256, 264. References, J. Chisholm, xxv, 154; T. J. Searle, xxx, 514.
- KING (GREGORY).** The Productiveness of Marriages in England. (Extract from his "Natural and Political Observations and Conclusions upon the State and Condition of England, 1696"), i, 351. Reference, C. Walford, xix, 175.
- KÖHNE (P.).** The German Law relating to Insurance against Sickness, xxiv, 220. Reference ("Report of Select Committee on National Provident Insurance"), xxvi, 485.
- KYD (T.).** The Enfranchisement of Leaseholds and the Taxation of Ground Rents, Chief Rents, and Kindred Charges on Land in England and Wales. (Samuel Brown Prize Essay, 1892), xxx, 345. Errata, xxx, 580.
- LAGRANGE'S FORMULA** of Interpolation, G. F. Hardy, xxiv, 105.
- LAMBERT (J. H.).** Historical Notice of him, F. Hendriks, i, 19.
- LANDRÉ (C. L.).** A Treatise on the Mathematics of Life Insurance. *Review* by F. E. Colenso, xxxvii, 107.
- LAND REGISTRATION,** A. G. Donald, xxxix, 255; J. R. Hart, xl, 246.
- LAPLACE (P. S., Marquis de).** Notice of his Method of Determining the Value of Annuities, Sir J. W. Lubbock, v, 197.
- Formula of Inverse Probabilities, W. M. Makeham, xxix, 214; E. L. Stabler, xxx, 240; G. F. Hardy, xxxi, 315.
- LAPSE ELEMENT,** The Effect of using it, in Calculating Premiums and Reserves, A. Hunter, xxxvi, 51; R. P. Hardy, xxxvi, 69; G. King, xxxvi, 71.
- Allowance for, in the Valuation of Whole-Life Industrial Assurances, T. G. Ackland and J. Bacon, xxxviii, 539; W. S. Anderson, xxxviii, 607; A. W. Watson, xxxviii, 613.
- LAPSE RATIO IN AMERICAN OFFICES,** H. Moir, xxxvi, 10.
- LAPSES.** See Discontinuances.

- LAUNDY (S. L.).** On a Method of Finding the Product of Two Factors by means of the Addition and Subtraction of Natural Numbers. (Describing his Table of Quarter-Squares), vi, 121.
- On the Advantages of the Modern Methods of Computation in Life Assurance Calculations. (Containing formulas for Change of Policy from Endowment Assurance to Whole-Life, and for amount of Paid-up Policy), viii, 58. Errata, viii, at 1. Reference, T. B. Sprague, viii, 112.
 - On the Facilities afforded in the Commutation System by the Introduction of Columns of Differences, viii, 168.
 - On a Method of using the Table of Quarter-Squares (to calculate a Table of Policy Values), ix, 112.
 - On the late Mr. Hillman's Tables of the Values of Life Assurance Policies (containing list of 99 errors), ix, 239.
 - On Increasing and Decreasing Scales of Premiums, x, 286. Errata, x, at 1.
 - On the facility with which the ordinary Annuity and Assurance values can be derived from the value of the Endowment, xi, 54.
 - On a Method of obtaining Half-Yearly and Quarterly Premiums from the Annual Premiums, xi, 232. Reference, Dr. A. Wiegand, xii, 54. Mr. Laundry's reply, xii, 55.
 - On premiums payable m times a year, xii, 55.
 - "Table of Quarter-Squares of all Integer Numbers up to 100,000, by which the Product of Two Factors may be Found by the aid of Addition and Subtraction alone", *Review*, vi, 234.
- "LAW OF FIRE INSURANCE."** (C. J. Bunyon) First Edition. *Review*, xiv, 472.
- Third Edition, *Notice of Publication*, xxv, 368.
- "LAW OF LIFE INSURANCE."** (C. J. Bunyon). First Edition. *Review*, iv, 145. Second Edition, *Review*, xv, 222. Fourth Edition, *Review* by J. E. Faulks, xxxix, 120.
- With chapter on Accident Insurance (C. Crawley). *Review* by G. H. Ryan, xxiv, 136.
- LAW OF MORTALITY.** See S. Brown, i, 20; H. Tompkins, iii, 7; T. R. Edmonds, v, 127; A. Buchanan, vi, 67; J. Reid, vi, 129; W. Orchard, vi, 181; W. M. Makeham, viii, 301, xiii, 325; W. Lazarus, x, 283; W. S. B. Woolhouse, xi, 150; B. Gompertz, xvi, 329; Dr. T. N. Thiele, xvi, 313; W. S. Nichols, xix, 28.
- Its relation to the Laws of Sickness and Invalidism, W. M. Makeham, xvi, 408.
 - Can it be represented in a Mathematical form? T. E. Young, xxii, 139.
 - (Mathematical), Dr. T. Wittstein, xxiv, 153.
 - See also *Graduation and Mortality* (4).
- "LAW OF MORTGAGE"** (W. G. Hayter). A Course of Lectures. *Review* by J. E. Faulks, xxxvi, 287.
- "LAW OF REAL PROPERTY IN ENGLAND"** (G. Wood Hill). A Course of Lectures. *Review* by A. R. Barrand, xxxiv, 392.
- LAW OF SICKNESS.** See H. Tompkins, iii, 7; T. R. Edmonds, v, 127; S. Brown, xi, 347; B. Gompertz, xvi, 329; W. M. Makeham, xvi, 408.
- LAW OF UNIFORM SENIORITY.** See *Uniform Seniority*.
- LAW REPORTS.** See *Legal Decisions*.
- LAWSON (R.).** On the hourly Distribution of Mortality, xix, 110.
- LAZARUS (W.).** On Assurances by the State, i, 378.
- Statistics of Suicide in Berlin, 1849 and 1850, ii, 292.
 - On the Uniform Action of the Human Will, iii, 169.
 - On the Progress and Position of German Assurance Offices in 1855. Translated and abridged by S. Brown, vii, 217, 289, viii, 45.
 - On the Leipzig Friendly Society, with Dr. Heym's Table of premiums for Sickness allowances, viii, 351.
 - On the Law of Human Mortality, x, 283.
 - On a Notation to be used in Life Assurance Computations, xii, 48.
 - Notice of Dr. A. Wagner's "On the Law prevailing in the Acts apparently under the control of the Human Will, &c.", xii, 183.

LAZARUS (W.) *continued.*

- Notice of Dr. A. Wiegand's "On Assurance against permanent Incapability, &c.," xii, 183, xv, 143.
- Description of the New Tables of Annuities by Dr. Otto Beek, Experience Mortality, 3½ per-cent interest, xiii, 251.
- Description of the New German Life Assurance Institute, xiv, 248.
- On some Problems in the Theory of Probabilities. Read at the second Meeting of the German Life Assurance Institute, on 11 March 1868. Translated by T. B. Sprague and J. Hill Williams, xv, 245. Reference, W. Sutton, xv, 452. Errata, xv, 455.
- On Dr. M. Kanner's Theory for the Adjustment of Mortality Tables, xvi, 424.
- On Rates of Mortality and their Causes. Translated by T. B. Sprague, xviii, 51, 212.
- On the Computation and Adjustment of Probabilities derived from Observation, xx, 410.

LEASEHOLD ENFRANCHISEMENT and Taxation of Ground Rents, &c., T. Kyd, xxx, 345; A. W. Tarn, xxx, 405.

LEASEHOLD REDEMPTION ASSURANCES. See Sinking Fund Assurances.

LEASEHOLDS for Lives or Years that have been the subject of Settlement, Concerning the Renewal of, C. J. Bunyon, iii, 280.

LEASES FOR LIVES. Reference to Powers of Life Tenant alone to grant, H. J. Rothery, xxx, 74; D. A. Bumsted, xxx, 76.

LEAST SQUARES (Method of). Illustration of its use, W. S. B. Woolhouse, xi, 150.

— Dr. T. Wittstein, xxiv, 154; W. M. Makeham, xxviii, 323.

— Applied to the Mathematical Law of Mortality, Dr. T. Wittstein, xxxiii, 399. Reference, G. F. Hardy, xxxiii, 490.

LEE (W.). Report on Public Health Act (11 and 12 Vic. cap. 63). Summary of Experience on Disease and Comparative Rates of Mortality, *Review*, ii, 97.

LEES (M. M.). Insurance against Issue, xxxiv, 592, xxxix, 119.

LEGAL ASPECTS OF DEBENTURES, A. R. Barrand, xxxiv, 428.

LEGAL DECISIONS, *Lindsay v. Baron Cotts* and others (1851) (Interest of Life Assured in Policy effected by Third Party), ii, 282.

— *In re Albert Life Office* (Position of Participating Policyholders), xvi, 241.

— On a Contract for Life Assurance in the time of Queen Elizabeth, R. Tucker, xvi, 419.

— *Albert Arbitration, Bell's Case* (Valuation of Policies for Proof in Liquidation). Reference, C. J. Bunyon, xvii, 2; Lancaster's Case, xviii, 41. Reference, C. J. Bunyon, xvii, 9.

— *In re English Assurance Company, Holdich's Case* (Valuation of Policies for Proof in Liquidation), xviii, 34.

— The London Assurance Corporation *v. Mansell* (Judgment of Master of the Rolls in an action to set aside an Agreement for Assurance of Life on the ground of concealment of material fact, *i.e.*, Refusal of Previous Proposals), xxii, 20.

— *Dalhousie Disentail Case, McDonald v. McDonalds*, xxiii, 77; Note (from *Insurance Monitor* of New York), xxiii, 435.

— *In re Blakemore ex parte Blakemore* (Concerning the Valuation in Bankruptcy proceedings of an Annuity determinable on death or marriage), xxiii, 124.

— *Last v. London Assurance Corporation* (Liability of Insurance Companies to Income Tax), xxv, 327. References, G. H. Ryan, xxvii, 30; (Editorial), xxviii, 99; B. Newbatt, xxviii, 281.

— *In re Bellamy* (Payment to Trustees), xxvi, 134. Reference, T. G. C. Browne, xxvii, 510.

— *In re Flower and the Metropolitan Board of Works* (Payment to Trustees), xxvi, 144. Reference, T. G. C. Browne, xxvii, 510.

— *Styles v. New York Life Insurance Company* (Liability of "surplus" of premiums over expenses to Income Tax), xxvii, 32. Reference, B. Newbatt, xxviii, 292.

— *Clerical, Medical and General Life Assurance Society v. Carter* (Liability of Life Assurance Companies to Income Tax), xxviii, 101. References, B. Newbatt, xxviii, 286; R. Tucker, xxviii, 309.

LEGAL DECISIONS—*continued*.

- Gresham Life Assurance Society *v.* Styles (Liability of Life Assurance Companies to Income Tax), xxx, 320. References, B. Newbatt, xxviii, 291; T. G. Ackland, xxviii, 305; J. E. Faulks, xxxviii, 307.
- Hambrough *v.* The Mutual Life Assurance Company of New York (Judgment of the Lord Chief Justice in an action to set aside an agreement for assurance of Life on the ground of mis-statement of facts), xxxi, 475.
- Jeffrey *v.* Sayles (Payment to Mortgagee). Reference, A. R. Barrand, xxxiii, 211.
- Paul *v.* Virginia (Liability of Insurance Corporation to comply with State Laws in the United States), S. Homans, xxxiii, 325.
- Dalby *v.* India and London Life Insurance Company (On the nature of the Contract of Life Insurance). Reference, S. Homans, xxxiii, 327.
- Crawford *v.* Canada Life Assurance Company (Payment of surrender-value to bankrupt assured), T. B. Sprague, xxxiii, 385.
- Rowell and Son, Limited, *v.* Commissioners of Inland Revenue (Stamping of Debentures redeemable at a premium). References, A. R. Barrand, xxxiv, 431; J. E. Faulks, xxxiv, 470.
- Crawford *v.* Canada Life Assurance Company (Chose in Action—Assignment Notice—Life Insurance), xxxv, 40.
- On the Position of a Purchaser (for Value) from the Assignee under a Voluntary Settlement, in the event of the subsequent Bankruptcy of the Settlor, several cases, xxxv, 372–379.
- Gresham Life Assurance Society *v.* Bishop (Liability of Life Assurance Companies to pay Income Tax upon Income arising from Investments in Foreign Countries), xxxvii, 402.
- Universal Life Assurance Society *v.* Bishop (Liability of Life Assurance Companies to pay Income Tax upon Income arising from Investments in Foreign Countries), xxxvii, 411.
- Forbes *v.* The Scottish Provident Institution, The Scottish Widows' Fund, &c. (Liability of Life Assurance Companies to pay Income Tax upon Income arising from Investments in Foreign Countries), xxxvii, 427.
- Standard Life Assurance Company *v.* Inland Revenue (Liability of Life Assurance Companies to pay Income Tax upon Income arising from Investments in Foreign Countries), xxxvii, 428.
- Income Tax as affecting Life Offices, several cases, J. E. Faulks, xxxviii, 297.
- Hunter *v.* The King ("Half-Credit" Policies in connection with Income Tax abatement Provisions). Reference, J. E. Faulks, xxxviii, 300, 322.
- Income Tax on Interest derived from Investments abroad, J. E. Faulks, xxxviii, 311.
- *In re* Dallas (Mortgages of Expectancies under Wills), J. R. Hart, xxxix, 253.
- *In re* Nelson and Company, Limited (Companies Winding-up), xxxix, 324.

LEGAL POINTS arising in Life Assurance Practice, A. R. Barrand, xxxiii, 205.

LEGAL POSITION of a Purchaser (for Value) from the Assignee under a Voluntary Settlement in the event of the subsequent Bankruptcy of the Settlor, G. J. Lidstone, xxxv, 371.

LEGENDRE (A. M.). Translation of his paper in the *Connaissance des Temps* for 1817, on Briggs's method of Interpolation, J. H. Williams, xiv, 84.

LEGISLATION. *See also* Acts of Parliament.

(1) *As to Life Insurance and Life Insurance Companies and Friendly Societies in Great Britain.*

Remarks on the Report of the Select Committee on Assurance Associations, C. Jellicoe, iv, 31, 131, 324. On the proposed Legislation, C. Jellicoe, viii, 101.

Review of Recommendations of Select Committee (1853), F. Hendriks, iv, 324.

Life Assurance Companies Acts, 1870–72, xvi, 4, xvii, 193. References, D. Denchar, xviii, 323, xxviii, 460; T. B. Sprague, xxiv, 235, xxv, 75; R. Teece, xxv, 351; G. King, xxix, 498; B. Newbatt, xxix, 537; A. Hendriks, xxx, 276; J. Chatham, xxxii, 393; J. E. Faulks, xxxiv, 567, 582; R. Toddhunter, xxxv, 1; T. G. Ackland, xxxv, 150.

LEGISLATION. (1) *As to Life Insurance and Life Insurance Companies and Friendly Societies in Great Britain - continued.*

- Affecting Life Assurance Companies, with special reference to the Acts of 1870 to 1872, T. B. Sprague, xxv, 73; G. King, xxix, 481.
 Laws affecting Policies of Life Insurance, W. K. Lemon, xxix, 381.
 Legal Points arising in Life Assurance Practice, A. R. Barrand, xxxiii, 205.
 On the Requirements of the Life Assurance Companies Act, 1870, in regard to Valuation Returns, with some Notes on the Classification and Valuation of Special Policies, R. Todhunter, xxxv, 1.
 Income Tax as affecting Life Offices, J. E. Faulks, xxxviii, 297.
 Friendly Societies' Act, 1875, G. H. Ryan, xxv, 21. (Certification of Annuities under), W. Sutton, xxvi, 225. (Certification of Tables of Contribution, &c., Historical Memorandum), xl, 212.

(2) *In Great Britain.*

- Policies of Assurance Act, 1867 (Enabling Assignees to sue in their own name), xiv, 46. Reference, T. B. Sprague, xxxiii, 381, 382.
 Sales of Reversions Act, 1867 (Editorial), xiv, 106.
 Married Women's Property Act, 1870, xvi, 19, xx, 298.
 Married Women's Property Acts, 1870 and 1882 (Clauses relating to Settlement Policies), xxiv, 88. References, T. B. Sprague, xxiv, 77; C. J. Bunyon, xxiv, 82; W. Hughes, xxvii, 58; W. K. Lemon, xxix, 405; A. R. Barrand, xxxiii, 222.
 Scotch Entails (Authority to grant provision to the Wives, or Husbands, and Children of Proprietors), T. B. Sprague, xix, 39.
 Mortgages, D. Pitcairn, xix, 369.
 Married Women's Policies of Assurance (Scotland) Act, 1880, xxiii, 48. Editorial Remarks, xxiii, 49. Extract from *Scotsman*, xxiii, 51; (Clauses relating to Settlement Policies), A. R. Barrand, xxxiii, 222.
 Registration Act (Births, Deaths and Marriages in England), 1836, A. F. BurrIDGE, xxv, 87.
 Public Health Acts, 1872-75 (results of, upon Mortality in Early Life), N. A. Humphreys, xxvii, 493.
 Trustee Acts, 1888, 1893, xxvii, 511. References, A. R. Barrand, xxxiii, 238; J. E. Faulks, xxxiii, 242.
 Income Tax Act, 1853, Schedules of, xxviii, 287.
 Judicature Act, 1873, W. K. Lemon, xxix, 403.
 Settled Lands Act, Power of Life Tenant to grant Leases under, H. J. Rothery, xxx, 74; D. A. Bunsted, xxx, 76.
 School Board for London Superannuation Bill. Reference, G. H. Ryan, xxxi, 470.
 Conveyancing Act, 1881. Reference, A. R. Barrand, xxxiii, 211, 212, 226, 237.
 Bankruptcy Act, 1883. References, A. R. Barrand, xxxiii, 216; G. J. Lidstone, xxxv, 371.
 Finance Act, 1894 (Liability of Settlement Policies to Estate Duty), A. R. Barrand, xxxiii, 225, 231. (Valuation of Reversions, &c.), xxxvi, 81.
 Malins' Act. Reference, A. R. Barrand, xxxiii, 226.
 Stamp Act, 1891. References, A. R. Barrand, xxxiii, 227; T. B. Sprague, xxxiii, 384.
 Life Assurance Companies (Payment into Court) Act, 1896, A. R. Barrand, xxxiii, 234.
 Legislation bearing upon the Relation of the Actuarial Profession to the State, J. Nicoll, xxxiv, 158.
 Stamps on Debentures, J. E. Faulks, xxxv, 154.
 Census Act, 1900, xxxv, 365; (Ireland), xxxv, 369.
 Legislation required in connection with Census Reform, G. H. Ryan, xxxvi, 351.
 Compensation to Workmen for Accidents, J. Nicoll, xxxvi, 417.
 Legislation enforcing Vaccination, A. F. BurrIDGE, xxxvii, 247.
 Registration of Title to Land, A. G. Donald, xxxix, 255; J. R. Hart, xl, 216.

LEGISLATION—*continued*.(3) *In the Colonies.*

- Victoria Life Assurance Companies Act, 1873, xx, 59.
 Tasmania Life Assurance Companies Act, 1874, xx, 411.
 New Zealand Life Assurance Companies Act, 1873, xx, 412.
 Canadian Life Assurance Companies Act, 1877, xx, 446.
 South Australia Life Assurance Companies Act, 1882, xxvi, 24.
 Canadian Insurance Act, 1886, xxvii, 459. Ditto, 1894 and 1895, xxxii, 200, 221.
 Western Australia Life Assurance Companies Act, 1889, xxix, 32.
 Cape of Good Hope Life Assurance Act, 1891, xxx, 244. Reference, (Editorial), xxxv, 379.
 Cape of Good Hope Stamp Act Amendment Act, 1887 (Extract from), xxxv, 380.
 Cape of Good Hope Licenses and Stamps Act Amendment Act, 1898 (Extracts), xxxv, 383.
 Indian Coinage and Paper Currency Act, A. J. Finlaison, xxxi, 413.
 General Remarks on Colonial Legislation. A. W. Tarn, xxxiv, 544.

(4) *In Foreign Countries.*

- Denmark.** Dr. T. N. Thiele, xxxvii, 54.
France. French Assurance Law and Decrees, 1905-6, xl, 343.
Germany. 1853, iii, 214.
 — On Government Interference with Assurance Business in, G. Hopf, iv, 141.
 — Suggestions relating to the Calculation and Investment of the Reserve, G. Hopf, xv, 270.
 — Bill to Regulate Insurance Companies, xv, 285.
 — On the Law of Insurance against Invalidity and Old Age. T. E. Young, xxix, 269. References, Sir E. W. Brabrook, xxx, 239; A. Hendriks, xxx, 285; J. Nicoll, xxxvi, 440.
 — Legislation affecting the management of Foreign Companies, Dr. K. Samwer, xxxvi, 374.
Holland. Life Assurance, H. Pimentel, xix, 210.
United States. 1852, iii, 47.
 — New York. Registration of Policies, xiv, 231.
 — Massachusetts. Standard of Solvency, xv, 34.
 — Insolvent Life Offices, xx, 439.
 — On Governmental Regulation of Life Insurance in the, S. Homans, xxxiii, 320. Reference, A. W. Tarn, xxxiv, 547.
LEIPZIG FRIENDLY SOCIETY, W. Lazarus, viii, 351.
"LE MONITEUR DES ASSURANCES", Extracts from:—
 — Translation of V. Senés's *Review* of T. B. Sprague's "Life Insurance in 1872", xvii, 291.
 — Progress of Life Assurance throughout the World, from 1859 to 1883, M. Besso, xxvi, 426.
LEMON (W. K.). Some Notes on Laws affecting Policies of Life Assurance, xxix, 381. Reference, A. R. Barrand, xxxiii, 206, 221.
LEVI (Prof. L.). On Weights and Measures. (From the "Exchange"), x, 337.
LEVIES (Funeral) in Friendly Societies, G. King, xxvi, 389; G. F. Hardy, xxvi, 478, xxvii, 303.
LEVINE (A.). Graduation. J. A. Higham's Theorem, xxxii, 290. References, G. F. Hardy, xxxii, 371; R. Todhunter, xxxii, 378.
 — On the Mortality of Assured Lives in West Africa, xxxiii, 516.
 — On the Generalisation of Simpson's Rule for Joint Life Annuities, xxxiii, 538.
 — On the Equated Time of Payment, xxxiii, 539.
 — On Extra Risks in relation to Double Endowment Assurances, xxxiv, 514.
 — Demonstration of the Extended Application of the Law of Uniform Seniority, xl, 302.

LEVINE (A.)—*continued.*

— Tables of Continuous Temporary Annuities. $(\bar{a}_{M-\bar{a}+1}:\bar{a})$, $(O)^M \frac{2^3}{1}$ per-cent, xl, 369.

— **Reviews:**

— — “On Centenarians and the Duration of the Human Race” (T. E. Young), xxxiv, 588.

— — “British Offices’ Experience (1863-1893): Collected and Arranged by the Institute of Actuaries and the Faculty of Actuaries in Scotland”, Annuitants, xxxv, 147; ditto, Assured Lives, Whole-Life, Male and Female, Endowment and Minor Classes of Assurance, 3 vols., xxxv, 484.

— — “Institute of Actuaries’ Text Book (Part I): Interest, including Annuities-Certain” (R. Todhunter), xxxvi, 385.

— — Obituary Notice of Professor J. J. Sylvester, xxxiii, 345.

LEWIS (J. N. and Dr. C. J.). The Variations in Masculinity under Different Conditions, xl, 154.

LEWIS (J. N.), MANLY (H. W.) and THOMAS (E. C.). On the Valuation of Staff Pension Funds, xxxvii, 193.

LIABILITY OF LIFE OFFICES. See Valuation of Life Policies.

LICENSES AND STAMPS ACT, Cape of Good Hope, 1898 (Extracts), xxxv, 383.

LIDSTONE (G. J.). On Assurances with return of Premiums, xxviii, 250.

— — On the Application of the Graphic Method to obtain a Graduated Mortality Table from a limited experience, by means of comparison with a Standard Table, xxx, 212.

— — On the Approximate Calculation of the Values of Increasing Annuities and Assurances, xxxi, 68.

— — On the treatment of Incomplete Years of Exposure in a Mortality Experience, xxxi, 304.

— — On the Distribution of the Divisible Surplus of a Life Assurance Company, with special reference to the Method originated by T. B. Sprague, and other Methods derived therefrom, xxxii, 73. References, T. G. C. Browne, xxxii, 194; T. E. Young, xxxvii, 47; Author, xxxix, 214; J. Buchanan, xxxix, 265-8.

— — Demonstration of an Expression for the Present Value of the profit from Surplus Interest, xxxii, 103.

— — On the General Expression for the Force of Mortality, xxxii, 390.

— — On a method of approximately calculating Net Premiums for Endowment Assurances on Two Joint Lives, xxxiii, 354. References, J. E. Faulks, xxxix, 231; Author, xxxix, 236, 247.

— — On the Calculation of the present Value of a series of Payments-Certain when the Reproductive Rate of Interest differs from the Remunerative Rate, xxxiii, 412.

— — Some Remarks on the Valuation of Endowment Assurances in Groups, xxxiv, 61. References, Author, xxxiv, 510; R. Todhunter, xxxv, 20.

— — Further Remarks on the Valuation of Endowment Assurances in Groups, xxxiv, 510, xxxviii, 1, 47. Reference, T. G. Ackland, xl, 46, 48.

— — On the Legal Position of a Purchaser (for Value) from the Assignee under a Voluntary Settlement, in the event of the subsequent Bankruptcy of the Settlor, xxxv, 371.

— — On the Solution of a General Problem relating to Contingent Assurances, xxxv, 480.

— — Mortality of Abstainers and Non-abstainers, xxxviii, 273, 275.

— — The Notation of Pension Fund Problems, xxxix, 208.

— — Changes in Pure Premium Policy-Values consequent upon variations in the Rate of Interest or the Rate of Mortality, or upon the introduction of the Rate of Discontinuance, xxxix, 209, 247.

— — On the Valuation of Widows’ Funds, xxxix, 364.

— — Demonstration of expansion of $r^p(x)+t-r^p x+t$ ($(O)^M$ Table), in ascending powers of e^x , xl, 83.

— — Demonstration of the extended application of the Law of Uniform Seniority, xl, 303.

- LIFE ASSURANCE.** "A few thoughts on Commission, Division of Profits, Selection of Lives, the Mortality in India, and other subjects relating to Life Assurance." (S. Brown), *Review*, i, 105.*
- "The Law of Life Insurance", by C. J. Bunyon. *Reviews*: First Edition, iv, 115. Second Edition, xv, 222. Fourth Edition, J. E. Faulks, xxxix, 120.
- Conditions for Foreign Residence (Editorial), xiv, 102.
- On the risk attaching to the Grant of, Dr. C. Bremiker, xvi, 216, 285.
- Scheme for Employees of Life Offices (Official), xxii, 365.
- Does it Insure? (Reprinted from *Harper's Monthly Magazine*), T. M. Coan, xxiii, 128.
- Does Assure. (Abridged from *Harper's Monthly Magazine*), Rev. S. H. Tyng, Jr., xxiii, 139.
- Cost of, extract from *Review*, xxiii, 360
- "The Law of Life Assurance, &c." (C. Crawley). *Review* by G. H. Ryan, xxiv, 136.
- Progress of, throughout the world, M. Besso (Translated), xxvi, 426.
- Particulars of the Life Assurance Branch of the Post Office, W. Sutton, xxvii, 414.
- In Ireland in 1725, Form of Instructions to Agents, xxviii, 218.
- Life Assurance Funds, 1837-87, D. Deuchar, xxviii, 445.
- In Australasia, (Extracts from Inaugural Address to the Insurance Institute of New South Wales), D. Carment, xxx, 219.
- Some of the Modern Developments of, B. Newbatt, xxxi, 1.
- A Discussion of Some Points of Life Assurance administration in respect of which Divergence of practice exists: a Plea for Uniformity, H. C. Thistleton, xxxi, 28.
- In America, Systems of, G. H. Ryan, xxxii, 45.
- In the West Indies, A. W. Tarn, xxxiv, 519.
- In South Africa, A. W. Tarn, xxxiv, 519.
- In Canada, A. W. Tarn, xxxiv, 520.
- In Australasia, A. W. Tarn, xxxiv, 522.
- In India, A. W. Tarn, xxxiv, 525.
- A Treatise on the Mathematics of, (C. L. Landré). *Review* by F. E. Colenso, xxxvii, 107.
- In the United Kingdom. History of. *See History of Life Assurance.*
- See also Board of Trade Returns and Business of Life Assurance.*
- LIFE ASSURANCE BOOK-KEEPING**, J. Chatham, xxxviii, 619.
- List of Literature on, A. E. Molyneux, xxxviii, 663.
- LIFE ASSURANCE COMPANIES**, Existing in 1852, S. Brown, iv, 15.
- In Germany, 1851, Summary of Operations, iii, 242. 1852, Constitution, Condition and Prospects of, G. Hopf, iii, 134, 220. 1853, Proposition of Law, iii, 244. New Business and Position of, 1852, iv, 136; 1853, v, 159; 1854, vi, 108; 1855, vi, 353; 1856, viii, 51; 1857, viii, 163; 1858, ix, 42. Progress of, 1850-52, iv, 137; 1853-55, vi, 353; 1856, viii, 50, 54. Progress and Position of, 1855, W. Lazarus, vii, 217, 289, viii, 45; 1870, G. Hopf, xvii, 200; 1881, Dr. A. Emminghaus, xxiv, 55.
- Business Management of Foreign Companies according to German Imperial Law, Dr. K. Samwer, xxxvi, 371.
- Amalgamation of, S. Younger, vii, 183; C. Jellicoe, vii, 254; T. B. Sprague, vii, 355; R. Tucker, x, 317.
- Investment of their Funds, S. Brown, vii, 241; A. H. Bailey, x, 142; J. Coles, xv, 1; T. B. Sprague, xvii, 229; A. G. Mackenzie, xxix, 185; A. R. Barrand, xxxiv, 421; C. R. V. Coutts, xl, 317.
- Legislation affecting, T. B. Sprague, xvi, 77; G. King, xxix, 481; Ditto, in Holland, H. Pimentel, xix, 210; Ditto, in the Colonies, A. W. Tarn, xxxiv, 511; Ditto, in France, xl, 313.
- In Relation to their Local Medical Examiners, C. Walford, xxii, 153.
- Valuation of Policies in Bankrupt Companies (extract from "Spectator", New York), xxiii, 306.
- Summary of Accounts (1814-1852), iii, 86.
- Report upon the accounts and statements submitted to the Board of Trade under the Act of 1870. W. R. Malcolm and R. G. C. Hamilton, xviii, 390.

LIFE ASSURANCE COMPANIES—*continued.*

- Annual Accounts as returned to Parliament. Summaries of Accounts, Life Assurance and Annuities. 1883 and 1884, xxv, 271; 1885, xxvi, 153; 1886, xxvi, 321; 1887, xxviii, 239; 1888, xxviii, 243; 1889, xxviii, 477; 1890, xxix, 471; 1891, xxx, 157; 1892, xxxi, 156; 1893, xxxi, 333; 1894, xxxii, 122; 1895, xxxii, 461; 1896, xxxiii, 449; 1897, xxxiv, 154; 1898, xxxv, 54; 1899, xxxv, 337; 1900, xxxvi, 201; 1901, xxxvii, 313; 1902, xxxviii, 172; 1903, xxxviii, 535; 1904, xxxix, 330; 1905, xl, 313.
- As Trading Concerns, T. B. Sprague, xxv, 295.
- Liability of, to Income Tax, A. H. Bailey, xxv, 314; B. Newbatt (Presidential Address), xxviii, 280. *Last v. London Assurance*, xxv, 327. Clerical, Medical and General Life Assurance Society *v. Carter*, xxviii, 101. Gresham Life Assurance Society *v. Styles*, xxx, 320. Upon Income arising from Investments in Foreign Countries, Legal Decisions, xxxvii, 402, 411, 427, 428, xxxviii, 311.
- On the Standard of Solvency in, as affected by Guaranteed Benefits, G. H. Ryan, xxxii, 25.
- On Certain Methods of Reconstructing an Insolvent Life Assurance Company, G. H. Ryan, xxxii, 33.
- Governmental Regulations in the United States, S. Homans, xxxiii, 320.
- The Work and Development of, in Greater Britain, A. W. Tarn, xxxiv, 517.
- Their Practice with regard to Vaccination, A. F. BurrIDGE, xxxvii, 291.
- Methods of Valuation and Distribution of Profits in the United Kingdom, 1776-1900, G. H. Ryan, xxxviii, 69.
- As affected by Income Tax, J. E. Faulks, xxxviii, 297.
- See also *Acts of Parliament.*
- “**LIFE ASSURANCE INVESTIGATION TABLES**” (B. H. Todd). *Review*, ii, 300.
- LIFE CONTINGENCIES.** See A. De Morgan, xii, 328, xiii, 129; E. Sang, xv, 257.
- “Tables and Formulae for the Computation of Life Contingencies” (P. Gray). *Review*, i, 104*.
- On the Improvement in the Calculation of, E. J. Farren, v, 185, viii, 121.
- On E. J. Farren’s Improved Method of Calculating, C. Jellicoe, vi, 105.
- On the Construction and Use of Commutation Tables for Calculating the Values of Benefits depending on, P. Gray, x, 84, 169, 220.
- “**LIFE CONTINGENCY TABLES**” (E. J. Farren). *Review*, iii, 181.
- “**LIFE INSURANCE IN 1872**” (T. B. Sprague). *Review* by V. Senés, xvii, 291.
- LIFE INSURANCE? OR LIFE ASSURANCE?** F. Hendriks, ii, 150; T. B. Sprague, xvi, 77; Dr. W. Farr, xix, 434.
- LIFE INTERESTS**, H. E. Nightingale, xxx, 9; W. B. Paterson, xxx, 536; J. R. Hart, xxxii, 55, 460.
- On the Inequitable Operation of the Property and Income Tax as regards them, C. Jellicoe, ii, 213.
- On the Value of Policies of Assurance in connection with, T. B. Sprague, viii, 12; W. D. Biden, x, 260.
- On the Apportionment of a Loan on successive, T. B. Sprague, xix, 372.
- On the Value in Practice of allowing for Income Tax, G. King, xxxviii, 344.
- LIFE INTERESTS IN REVERSION.** See *Reversionary Life Interests and Reversions.*
- LIFE LINES** (Policy), J. Meikle, xxiii, 385.
- LIFE OFFICES’ ASSOCIATION**, A. Hendriks, xxx, 278.
- LIFE POLICIES** (Various Classes of), A. E. Molyneux, xxviii, 251.
- LIFE POLICY** (Form of), Embodying conditions of Foreign Residence, A. H. Bailey, xiv, 105.
- In 1724, (London Assurance Corporation), xxii, 248.
- LIFE RISKS**, On the Determination of, Dr. M. Kammer, xiv, 439; Dr. C. Bremiker, xvi, 216, 285.
- Assessment of, J. Chisholm, xxv, 408.
- Syphilis as affecting Life Insurance Risks, Dr. E. J. Marsh, xxxii, 296.
- On Extra Risks in relation to Double Endowment Assurances, A. Levine, xxxiv, 514.
- (Special Classes of), Experience of 34 American Life Companies, Compiled and Tabulated by the Actuarial Society of America, New York, 1903. *Review* by J. D. Watson, xxxviii, 363.

- LIFE TABLES** (*British Offices*’, 1893), R. P. Hardy, xxxvi, 315, xxxvii, 147; T. G. Ackland, xxxvii, 113; G. F. Hardy, xxxvii, 175–179, xxxviii, 501. *Reviews* (Editorial), xxxvii, 439, 541, xxxviii, 287, xxxix, 123.
- Official Symbols adopted by the Joint Committee, xxxviii, 97.
- An Account of the Principles and Methods adopted in the Compilation of the Data, the Graduation of the Experience and the Construction of Deduced Tables, Assured Lives and Annuitants. *Review* by R. Todhunter, xxxviii, 356.
- See also **British Offices’ Life Tables, Graduation, Institute of Actuaries, and Mortality Tables.**
- LIFE TENANT**, and Reversioner, on the Equitable Apportionment of a Fund between, C. Jellicoe, vi, 61; A. Baden, xvi, 269, 281; H. W. Porter, xvi, 285; E. Smyth, xvi, 386; T. B. Sprague, xviii, 77.
- Power of, to Grant Leases under the Settled Lands Act, H. J. Rothery, xxx, 74; D. A. Bumsted, xxx, 76.
- On a Life Interest in an Estate, including a Reversion expectant on the Death of the, J. R. Hart, xxxii, 460.
- LIFE YEAR.** Method of arranging Observations for Mortality Experience, W. J. H. Whittall, xxxi, 162.
- “LIGHT SCIENCE FOR LEISURE HOURS”, Extract from:—**
- Influence of Marriage on the Death Rate, being Observations on Dr. J. Stark’s Conclusions, R. A. Proctor, xxiii, 44.
- LIMITATION OF RISKS.** On the, T. B. Sprague, xiii, 20.
- LIMITED AND CONTINGENT INTERESTS IN PROPERTY.** On their Origin and Nature, C. J. Bunyon, xviii, 1.
- LIQUOR TRADE.** Mortality in the. Investigations by the Associated Scottish Life Offices, xxxiii, 245, 252. See also **Innkeepers and Publicans.**
- LOADING** of Assurance Premiums, C. Jellicoe, i, 171, ii, 340; W. M. Makeham, xv, 354; H. A. Smith, xx, 145.
- Should it be Omitted in Valuation? C. Jellicoe, iii, 292; Dr. W. Farr, iv, 268; J. M. McCandlish, xx, 25.
- For Contribution to Expenses, G. S. Crisford, xxi, 309; to Profit, G. S. Crisford, xxi, 310.
- Specimen Loading for Non-Profit Premiums, T. B. Sprague, xxii, 396.
- First Attempt to Load Pure Premiums, A. H. Bailey, xxiii, 247.
- Office Premium Loadings, H. W. Manly, xxiii, 237; G. S. Crisford, xxv, 284, 387.
- Specimen Loading, With and Without Profit Premiums, H. J. Rothery, xxx, 134.
- The Loading System of Distributon of Surplus, G. J. Lidstone, xxxii, 75.
- Specimen Loadings for Uniform and Compound Reversionary Bonus of 1 per-cent per annum, H. W. Andras, xxxii, 348, 349.
- See also **Valuation of Life Policies.**
- LOANS** Repayable by Instalments, Problems connected with, P. Gray, xiv, 91, 182, 397; W. M. Makeham, xviii, 132.
- LOANS ON POLICIES.** See **Policies.**
- LOANS ON RATES.** See **Rates.**
- LOBB (H. W.).** Hygiene; or, the Handbook of Health. In two Parts; the First Part being addressed to Members of District Boards under Sir Benjamin Hall’s “Local Management Act”, Magistrates, Clergymen, &c.; the Second Part to the public in general. *Review* by H. W. Porter, vi, 110.
- LOCAL GOVERNMENT BOARD,** Memorial by the Institute of Actuaries to the President of, as to the taking of the Census in 1901, xxxv, 362.
- LOGARITHMS.** On the Form of the Number whose Logarithm is Equal to Itself, E. J. Farren, iii, 323.
- On Formulæ for using Tables of, C. W. Merrifield, vi, 298.
- Gauss’, On the Respective Modifications of these Tables by H. Filipowski and himself, P. Gray, vii, 350.
- Heppel’s, C. Jellicoe, x, 82.
- Ursin’s and Bremiker’s, P. Gray, xi, 230; Sharpe’s, Wolfram’s, Hutton’s, Callet’s and Vega’s, P. Gray, xii, 213; Shortrede’s, P. Gray, xii, 265.

LOGARITHMS—*continued.*

- List of Errors in Hutton's 20-place Table, xii, 215; in Callet's 20-place Table, xii, 215; in Wolfram's 48-place Table, xii, 215; in E. Sang's, xvii, 142, 298.
- Anti-Logarithms, to Twelve Places. On a Table for their Formation, P. Gray, xii, 71, 121, 212, 252. (The Table commences at p. 91.)
- — Correct to Ten or Eleven Places. Easy Method of Formation based on Gray's Tables. D. J. McG. McKenzie, xxiv, 243. Reference, G. F. Hardy, xxiv, 252.
- — A Re-arrangement of the Four-figure Table, as a Mechanical Aid to Calculation, J. A. Robertson, xxxii, 180.
- Lecture by W. Sutton, xvi, 442.
- Of Numbers, On Errors in Tables of, J. W. L. Glaisher, xvii, 352.
- Calculation to a Large Number of Places by means of Factor Tables. (Extracted from Paper on Factor Tables in the "Proceedings of the Cambridge Philosophical Society"), J. W. L. Glaisher, xxii, 346. Reference, P. Gray, xxii, 350.
- "Inwood's Tables", G. F. Hardy, xxiii, 272.
- P. Gray's "Twelve-figure and Twenty-four-figure Tables", D. J. McG. McKenzie, xxiii, 406.
- "Notes on the Theory of Logarithms." (*Notice of Publication*), W. R. Macdonald, xxv, 368.
- To Ten Places, J. Chisholm, xxvi, 55.
- "LOG e." On Method of finding, from "Exposed to Risk", H. P. Calderon, xxxv, 162.
- Mechanical Process for obtaining graphically, H. P. Calderon, xxxv, 173.
- LONDON**, Growth of, Sir W. Petty, i, 234.
- Mortality in, B. Smith, iii, 252, iv, 262.
- LONDON ASSURANCE CORPORATION**, Copy of Life Policy granted in 1721, xxii, 248.
- Experience of (in respect of Extra Risks), A. H. Bailey, xxiv, 321.
- Instructions to Agents in Ireland in 1725 (form of), xxviii, 218.
- "**LONDON DAILY STOCK AND SHARE LIST.**" (George Clare). A Course of Lectures. *Review* by A. R. Barrand, xxxiv, 394.
- LONEY (Prof. S. L.)**. Announcement of appointment as Examiner for Part I, xxxi, 85, 407.
- LONGEVITY (HUMAN)**. Extracts from J. Easton's Work, i, 239.
- Vegetarians compared with persons who live on mixed diet, Dr. T. W. Forster, vii, 148.
- Remarkable instances of, A. Day, xii, 186, xxx, 263; C. D. Higham, xxx, 163.
- "On Centenarians, and the Duration of the Human Race" (T. E. Young). *Review* by A. Levine, xxxiv, 588.
- A First Study of the Inheritance of, and the Selective Death Rate in Man, Miss M. Beeton and Karl Pearson, xxxv, 112.
- See also Expectation of Life.*
- LONGSTAFF (G. B.)**. "Studies in Statistics, Social, Political, and Medical." *Review* by A. F. BurrIDGE, xxix, 459.
- LONSDALE (Dr. H.)**. Life of John Heysham, M.D., *Review*, xvi, 221.
- LOST POLICIES (Life Assurance)**, T. B. Sprague, xxxiii, 373.
- LOUS (—)**. Historical Notice of him, F. Hendriks, i, 19.
- LOW (G. M.)**. On the Method of comparing the Expected with the Actual Experience of a Life Insurance Company, as regards the number of deaths and amount of claims, xviii, 195. Reference, J. Chatham, xxxii, 396.
- LUBBOCK (Sir J. W.)**. On the Calculation of Annuities, and on some Questions in the Theory of Chances. (Reprinted from the Transactions of the Cambridge Philosophical Society), v, 197.
- On the Comparison of various Tables of Annuities. (Reprinted from the Transactions of the Cambridge Philosophical Society), v, 277.
- On the Clearing of the London Bankers, ix, 141.

LUBBOCK (Sir J. W.)—*continued.*

— Demonstration and Illustration of his Formula for approximating to the Value of a Life Annuity, T. B. Sprague, xviii, 305. *See also* W. Sutton, xv, 307.

— On the application of his Formula of Summation to find the Value of Annuities and Assurances, T. B. Sprague, xxii, 55; G. King, xxvi, 276.

LYON (Dr. T. G.). The Mortality amongst Europeans in certain Unhealthy Districts, xxix, 541. Reference, A. E. Sprague, xxxiii, 285.

— Remarks on Consumption in Relation to Life Assurance, xxx, 120. Reference, T. B. Macaulay, xxx, 335.

— Consumptive Family History, xxxi, 155.

MAAS (E.). Translation of parts of his Essay on the Calculation of the Premiums and Reserve of Life Assurance Companies in England and France, F. A. Curtis, xix, 416.

MACAULAY (T. B.). Retirants in the Eighth Year, xxii, 134.

— Relation between the Height and Weight of Men, xxiii, 62. Reference, Anonymous, xxiii, 64.

— The Actuarial Society of America, xxix, 544.

— Consumptive Family History, xxx, 335. References, Author, xxxi, 80; Dr. T. G. Lyon, xxxi, 155.

— Maximum Mortality Percentages, xxxii, 117. References, T. B. Sprague, xxxii, 197; J. Chatham, xxxv, 237.

McCANDLISH (J. M.). On the Principles to be observed in Life Office Valuations made with a view to Distribution of Profits. (A Paper read to the Actuarial Society of Edinburgh), xx, 12.

McCAY (Prof. C. F.). American Mortality Tables. (Reprinted from the "Spectator" of New York), xvi, 20.

— On the Adjustment of Mortality Tables with reference to the Weight of Observations, xxii, 24. References, G. King and G. F. Hardy, xxii, 203; J. Sorley, xxii, 310; J. Chatham, xxix, 110.

McCLINTOCK (E.). On the American Ten-Year Non-Forfeiture Policies, xvii, 301.

— On the Computation of Annuities on Makeham's Hypothesis, xviii, 242. References, R. Todhunter, xxxiii, 311; O. F. Diver, xl, 31.

— Award of Second Prize (T. B. Sprague's), xxviii, 414.

McCUAIG (C.). On J. R. Macfadyen's Letter on Formulæ in D. Jones's Work, xiii, 251.

MCDONALD (J.). (1.) Annual and Single Endowment Assurance Premiums, HM $2\frac{1}{2}$ per-cent. (2.) Values of $\log D_{xx}$, $\log N_{xx}$, and a_{xx} , HM $2\frac{1}{2}$ per-cent, xxxii, 447.

MCDONALD (J.) and BURN (J.). An Investigation into the Rates of Re-Marriage and Mortality amongst Widows in receipt of relief from the Patriotic (Russian War) Fund, 1854 1900, xxxviii, 433.

MACDONALD (W. R.). "Notes on the Theory of Logarithms." (*Notice of publication*), xxv, 368.

MACFADYEN (J. R.). On certain Formulæ in D. Jones's Work on Annuities. (Pointing out Error in the formula for the Single Premium for a Deferred Assurance on the Last Survivors of several lives), xiii, 200. *See also* C. McCuaig, xiii, 251.

— On the Application of Bonuses to Limit either the Term of an Assurance, or the Number of Payments to be made under it. (Being excerpts from a Paper read before the Actuarial Society of Edinburgh), xiv, 364.

— On the Considering the "Paid-up" Policy as the Equivalent of the Ratio the Premiums Paid bear to the Total Number Payable, xv, 297.

— On "Extra Premiums", xvii, 77. Reference, W. M. Makeham, xvii, 156.

— On a General Formula for the Value of Present or Future Benefits, whether Free or Burdened with Charges; and on the Application of the Formula to Determining the Surrender-Values of Life Policies, xvii, 381.

— Does a Large New Business Benefit the Policyholders of a Life Company? xviii, 335; Editorial Note, xviii, 342.

— On Mortality Fluctuations, xviii, 416.

— What Price can a Purchaser give for an Annuity of 1, Payable during the next n years of the lifetime of a Person aged x ? xix, 141.

MACFADYEN (J. R.) *continued.*

— Under a Net Premium Valuation can a Policy ever appear as an asset instead of a liability? xix, 142.

— On the measure of Expenses in Life Assurance Companies, xix, 153, 115. Reference, D. Deuchar, xix, 303.

— On the carrying out of Reversionary transactions by Life Assurance Companies, xx, 385.

MACFARLANE (A.). On the Tradition Question in Probabilities, xxii, 356. *See also Probabilities.*

McGOWAN (J.). An enquiry into the Methods and General Principles to be adopted in calculating the Rates of Contribution or percentage deductions from salary, in the case of Superannuation Funds and Pension Funds generally, xxxvii, 15.

MACKENZIE (A. G.). On the Practice and Powers of Assurance Companies in regard to the Investment of their Life Assurance Funds, xxix, 185. References, D. Carment, xxx, 227, 228; J. Burn, xxxiv, 493.

McKENZIE (D. J. McG.). On the Transformation of Annuities (Certain) and Annuity-Values payable yearly, into the like when payable in fractional intervals of a year, by means of constant factors; with specimens of Tables computed for this purpose, and examples of their application, xxiii, 162. Reference (Editorial), xxiv, 423.

— Supplementary note on the Application of the Factors to Life Annuity-Values and Assurance Premiums, xxiii, 187.

— On a Method of Approximating to a Rate of Interest in an Annuity-Certain, xxiii, 405.

— On an easy Method of forming Logarithms and Anti-Logarithms correct to ten or eleven places, with the aid of Peter Gray's Tables for the formation of Logarithms and Anti-Logarithms to twelve places, xxiv, 243. Reference, G. F. Hardy, xxiv, 252.

— A Method of using J. Chisholm's Tables of the Values of Policies of all durations, according to any Rate of Interest and Mortality, xxviii, 247.

McLAUCHLAN (J. J.). On the formulas for the Approximate Determination of the Rate of Interest of an Annuity, xviii, 290. Reference, W. Sutton, xix, 80.

— On the Rate of Mortality among Adult Government Emigrants on the Voyage to Australia, during the years 1847-1861 inclusive, as determined from the Reports of the Emigration Commissioners, xviii, 381.

— On the Mortality in the British Navy and Army, as shown by the Official Reports, xxxiv, 251. Reference (Editorial), xxxiv, 358.

McLAURIN'S FORMULA of Summation, G. F. Hardy, xxiv, 95; G. King, xxviii, 214.

MACNAGHTEN (S. E.). On the determination of Average Ages by Methods of Weighting, xl, 120.

McWILLIAM (Dr. J. O.). The Epidemiological Society, its views and objects, ii, 54.

MADRAS MILITARY FUND, Mortality Experience, S. Brown, xi, 8.

— Marriage Rate, S. Brown, xi, 20.

MAINGIE (L.). "Compensation for Workmen's Accidents in Belgium." (Transactions of the Second International Congress of Actuaries). Reference, J. Nicoll, xxxvi, 490.

MAKEHAM (W. M.). On the means of approximating to the Rate of Interest yielded by certain Investments, vi, 54.

— On a Method of adjusting Tables of Mortality, vi, 357.

— On the Law of Mortality and the Construction of Annuity Tables, viii, 301. References, P. Gray, xi, 236; W. S. B. Woolhouse, xv, 399; W. Lazarus, xviii, 217; W. Sutton, xx, 174.

— On the Calculation of Premiums for Assurances on Lives and Survivorships by the aid of Gompertz's Hypothesis, ix, 361. References, P. Gray, xi, 236; W. S. B. Woolhouse, xv, 400; F. E. Colenso, xxxi, 338.

— Solutions of the Compound Survivorship Assurance Problems, x, 241. Reference, Author, xii, 119; F. E. Colenso, xxxi, 353; Levi W. Meech, xxxii, 72; G. F. Hardy, xxxiv, 93.

— Solutions of General Problems in Survivorships, xii, 61.

MAKEHAM (W. M.)—*continued.*

- On W. B. Hodge's remarks on "Solutions of General Problems in Survivorships", xii, 118. Mr. Hodge's Reply, xii, 182.
- On the Calculation of Premiums returnable at death or withdrawal, xii, 233. Reply by J. W. Stephenson, xii, 302.
- On the Principles to be observed in the Construction of Mortality Tables, xii, 305.
- On J. W. Stephenson's Theory of Options, xii, 363.
- On S. Younger's letters (on the value of options), and on the general solution of Problems involving distinct contingencies, xiii, 109.
- On the Law of Mortality, xiii, 325. References, Author, xiv, 160, xvi, 345.
- On the Adjustment of Premiums for Life Assurance in reference to Extra Risks, xiv, 159, 242. References, A. H. Bailey, xiv, 247; J. R. Macfadyen, xvii, 87; Author, xvii, 156.
- On the Theory of Annuities-Certain, xiv, 189. Reference, G. King, xx, 437.
- On the Proper Method of Loading the Premiums required for the Assurance of Sums at Death, &c., xv, 354.
- A Table for determining the Amounts, &c., of Continuous Annuities-Certain, xv, 432. Reference, G. F. Hardy, xxxv, 191.
- Objections to the Net Premium mode of Valuation, xv, 449.
- On the method of Calculating the Differential Coefficients of a function from its Differences; and on their application to the Interpolation of functions of one, two, or three variables, xvi, 98.
- Explanation and Example of a Method of constructing Mortality Tables with Imperfect data; and of the extension of Gompertz's Theory to the entire period of Life, xvi, 344. Reference, S. C. Chandler, Jr., xvii, 163.
- On the Laws of Sickness and Invalidism, and their relation to the Law of Mortality, xvi, 408.
- On a means of dispensing with Extra Premiums for Deteriorated Health, xvii, 153.
- On the Integral of Gompertz's Function for expressing the values of sums depending upon the Contingency of Life, xvii, 305, 445. Reference, E. McClintock, xviii, 242.
- On the Solution of Problems connected with Loans repayable by Instalments, xviii, 132. References, J. J. McLauchlan, xviii, 296; W. Sutton, xix, 80.
- On an Application of the Theory of the Composition of Decremental Forces, being an illustration of the Comparative Advantages of the Methods of Bernoulli, D'Alembert and Laplace, to demonstrate the effect of the extinction of small-pox upon the Increase of Population, xviii, 317.
- On the further development of Gompertz's Law, xxviii, 152, 185, 316. Errata, xxviii, 416. References, Author, xxviii, 393; W. S. B. Woolhouse, xxviii, 481, xxix, 241; G. H. Ryan, xxx, 5, 7.
- Demonstration of a Formula relating to the Theory of Errors, xxviii, 393.
- On the Theory of Inverse Probabilities, xxix, 242, 444. Errata, xxx, 580. References, Author, xxix, 476; E. L. Stabler, xxx, 239.
- On a Problem in Probabilities (the *a posteriori* probabilities of certain Hypotheses as to the drawing of balls from an urn), xxix, 475.
- Examples of the application of his Modification of Gompertz's Law of Mortality to the adjustment of the Mortality Experience of the Mutual Benefit Life Insurance Company, W. S. Nichols, xix, 28.
- On the application of his Modification of Gompertz's Law of Mortality to the Practical Calculation of the Values of Survivorship Benefits, F. E. Colenso, xxxi, 337.
- On the application of his Formula to adjust Select Tables, G. F. Hardy, xxxi, 359, xxxiii, 493.
- Method of Graduation, G. King and G. F. Hardy (Aggregate Method), xxii, 201; (Residual Series), xxii, 205; J. Sorley, xxii, 328; Dr. J. Kamp, xxiv, 70; G. H. Ryan, xxx, 3; G. F. Hardy (modified for Select Tables), xxxi, 359, xxxiii, 493; H. P. Calderon, xxxv, 157.
- Obituary Notice of, G. H. Ryan, xxx, 1.

MALCOLM (W. R.). See Board of Trade Returns.

MALES AND FEMALES. Influence of Marriage on Mortality, Dr. J. Stark, xxii, 233; T. B. Sprague, xxiii, 40; H. Spencer, xxiii, 42; R. A. Proctor, xxiii, 44; Dr. W. Robertson, xxiii, 47.

— Relative Rate of Mortality, N. A. Humphreys, xxvii, 492.

MALINS' ACT. See Legislation.

MANCHESTER CORPORATION Waterworks Annuities, A. J. Finlaison, xxiv, 371.

MANCHESTER UNITY OF ODDFELLOWS, Mortality and Sickness Experience. References, H. Tompkins, v, 9; S. Brown, xi, 343; F. W. Frankland, xxi, 380; G. H. Ryan, xxv, 29; G. F. Hardy, xxvii, 287, xxxi, 149; F. G. P. Neison, Jr., xxxi, 151; C. D. Higham, xxxv, 433.

— Examples drawn from the Experience of the, to illustrate the Methods of Analysing and presenting the Mortality, Sickness, and Secession Experience of Friendly Societies, A. W. Watson, xxxv, 268. Reference, Author, xxxviii, 533.

— Experience, 1893-1897, On the Graduation of, J. Spencer, xxxviii, 334.

— An account of an investigation of the Sickness and Mortality Experience of the L.O.O.F., Manchester Unity, 1893-1897, by A. W. Watson. *Review* (Editorial), xxxviii, 369.

MANLY (H. W.). A Comparison of the Values of Policies as found by means of the Various Tables of Mortality, and the different Methods of Valuation in use among Actuaries (Messenger Prize Essay, 1868), xiv, 249. References, J. Valentine, xviii, 229; G. King, xix, 381, xx, 250; J. M. McCandlish, xx, 19; S. G. Warner, xxxvii, 58.

— On different Modes of Constructing Tables of the Values of Policies, xv, 169. Reference, H. A. Smith, xvi, 75.

— On a Certain Method of Distributing the Surplus among the Assured, and the construction of an Equitable Scale of Office Premiums with reference thereto, xxiii, 233.

— On the American Tontine and Mutual Assessment Schemes, xxvi, 182.

— Policy Year and Calendar Year Methods, xxvi, 272. Reference, W. J. H. Whittall, xxxi, 192.

— Formulas and Tables for applying Profits to converting Whole-Life Policies into Endowment Assurances and to making Endowment Assurances payable at an earlier age, xxvii, 362. Further Contribution thereon, xxviii, 333. References, T. E. Young, xxvii, 368; F. E. Colenso, xxvii, 409; H. P. Calderon, xxviii, 394; G. H. Ryan, xxxii, 37.

— An attempt to measure the Extra Risk arising from a Consumptive Family History when the Life proposed for Assurance is physically sound and healthy, xxx, 97. References, T. B. Macaulay, xxx, 335; H. Westergaard, xxxi, 375.

— On Consumptive Family History, xxx, 338. Reference, T. B. Macaulay, xxxi, 80.

— Presidential Addresses (November, 1898), xxxiv, 347; (November, 1899), xxxv, 97. Reference, F. W. Fulford, xxxv, 199.

MANLY (H. W.) and FOOT (H.). On the Valuation of Staff Pension Funds: Part II, Widow's and Children's Pensions, xxxviii, 191.

MANLY (H. W.) and THOMAS (E. C.). On the Valuation of Staff Pension Funds, xxxvi, 209. Errata, xxxvii, 244. Reference, H. T. Adlard, xxxvi, 391.

MANLY (H. W.), THOMAS (E. C.) and LEWIS (J. N.). On the Valuation of Staff Pension Funds, xxxvii, 193.

"**MANUAL OF ALGEBRA**" (Rev. J. A. Galbraith). *Review*, xiv, 59.

MARINE AND GENERAL Life Office, Mortality Experience of (Mariners' Lives), G. H. Ryan, xxvi, 413.

MARINERS (Master), On the Mortality of, F. G. P. Neison, Sr. *Review*, i, 241.

— Single and Annual Premiums, Calculated according to Neison's Observations, E. H. Galsworthy, iv, 88.

— Mortality among, G. H. Ryan, xxvi, 413.

See also C. Jellicoe, vii, 135; G. J. Lidstone, xxx, 217.

MARKET VALUE, Of Annuity, R. Wilding, xxii, 61. See also Life Interests.

— Of Policies as compared with their Surrender-Values, G. S. Crisford, xxi, 335. Reference, R. P. Hardy, xxi, 377.

MARR (T.). On the Conversion of Ordinary Assurances for the Whole Term of Life into Endowment ones by Application of Bonus, xiii, 246. Reference, J. R. Macfadyen, xiv, 365.

— Solution of Problem proposed by A. De Morgan, "Value of a Policy", xiv, 156.

— Correction in the Value of the Annuity at age 35, given in the English Life Tables, No. 1, Males, 4 per-cent, xv, 76.

MARRIAGE, Productiveness of: England (1696), Gregory King, i, 351. Influence of Ages of Parents on it, S. Brown, iii, 17.

— Sex of Children: Influence of Ages of Parents on it, S. Brown, iii, 17; G. Hopf, iii, 255.

— Its Influence on Mortality among Males, Lord Neaves, xvii, 63.

— Adjustment of Probabilities of Marriage or Death, T. B. Sprague, xxi, 445.

— Its Influence on Mortality among Males and Females, Dr. J. Stark, xxii, 233. Observations by H. Spencer, R. A. Proctor and Dr. W. Robertson, xxiii, 40.

— Of Bachelors, Probability of, W. T. Thomson, xxiii, 88.

— Valuation of an Annuity determinable on Death or Marriage. (*In re* Blakemore, *ex parte* Blakemore), xxiii, 124.

— Average Ages of Husbands and Wives at, A. F. BurrIDGE, xxv, 104.

— Value of Benefits Depending on Marriage and Birth of Issue, T. B. Sprague, xxviii, 350.

— An Investigation into the Experience of the Widows' Funds of the Scottish Banks, A. Hewat and J. Chatham, xxxi, 428.

— On the Calculation of the Contributions to be made to an Annuity Fund for Widows and Children, &c., O. Seljoll, xl, 200.

— (**Fruitful**). On the Probability that there will hereafter be Issue of a Marriage hitherto Childless, T. B. Sprague, xxii, 117.

— — Probability of Issue of a Marriage entered into by a Man above Forty, T. B. Sprague, xxii, 359.

— — Probability of Issue of a Marriage entered into at any Age, T. B. Sprague, xxv, 160, xxvii, 195.

— — Relative Ages of Husbands and Wives, J. Chatham, xxvii, 37.

See also xl, 209-11.

— (**Insurance**). Notice of Suggestion in the Prudent Man's Almanac (1852), W. Bridges, iii, 183, vi, 53; G. Scott, vi, 47.

— (**Rate**) in Belgium, Massachusetts and England, at Different Ages of the Sexes, S. Brown, ii, 341, vii, 188.

— — In Austria, J. Hain (quoted by W. Lazarus), iii, 169.

— — Among Females, with Suggestions for Extending the Application of the Principle of Assurance to the Social Condition, G. Scott, vi, 47.

— — Among British Peerage Families, A. Day, x, 181. Second Marriages of ditto, A. Day, xii, 185.

— — Among Europeans in India, S. Brown, xi, 1, xii, 276.

— — Among Widowers, T. B. Sprague, xxii, 77.

— — Among Widows and Spinsters, T. B. Sprague, xxii, 352.

— — Per Thousand of Mean Population in England and Wales, A. F. BurrIDGE, xxv, 105.

— — In Australia, A. F. BurrIDGE, xxv, 106.

— — Re-Marriage among Widows of Miners. (Report to the Northumberland and Durham Miners' Permanent Relief Fund), T. Y. Strachan, xxvii, 48.

— — Re-Marriage amongst Widows in receipt of relief from the Patriotic (Russian War) Fund, 1854-1900, J. Burn and J. McDonald, xxxviii, 433.

See also Issue and "Masculinity."

MARRIAGE AND MORTALITY TABLES. On the Construction of Tables from Observations made as to the Rates of Marriage and Mortality among any body of Men, T. B. Sprague, xxi, 406.

— For Widowers, Construction and Use of, J. Chatham, xxviii, 384.

See also Issue.

MARRIAGE SETTLEMENTS, Policies of Assurance in, A. R. Barrand, xxxiii, 220.

See also Settlement Policies.

MARRIED WOMEN (New York) Act, 1840, with respect to Insurance on Lives for their Benefit, i, 220.

- MARRIED WOMEN'S POLICIES of Assurance (Scotland) Act, 1880**, xxiii, 48.
 — Settlement Policies under, A. R. Barrand, xxxiii, 222.
- MARRIED WOMEN'S PROPERTY ACT, 1870**, xvi, 19.
 — Form of Procedure in Appointing a Trustee thereunder, xx, 298.
- **1870 and 1882.** Settlement Policies under, T. B. Sprague, xxiv, 77;
 C. J. Bunyon, xxiv, 82; A. R. Barrand, xxxiii, 222.
- On the Life Assurance Clauses of, W. Hughes, xxvii, 58.
- MARRIED WOMEN'S PROPERTY ACTS, Colonial**, A. W. Tarn, xxxiv, 546.
- MARSH (Dr. E. J.).** Syphilis as affecting Life Insurance Risks, xxxii, 296.
- MARSHALL (J.).** On the Rate of Mortality amongst Europeans and their
 Descendants residing in the Island of Jamaica, iv, 39.
- Obituary Notice of, vi, 113.
- "MASCULINITY"**, The Variations in, under Different Conditions, J. N. and Dr.
 C. J. Lewis, xl, 154.
- MASIUS (E. A.).** On the Income Tax in the Kingdom of Saxony, ii, 70. In
 Prussia, 1850, ii, 293.
- Report, 1851, on the Various Branches of Assurance in Germany, ii, 115.
- MASSACHUSETTS.** See Foreign Intelligence.
- MATHEMATICAL LAW OF MORTALITY**, T. E. Young, xxii, 139; Dr. T.
 Wittstein, xxiv, 153.
- MATHEMATICAL NOTATION AND PRINTING.** Report of the Committee of
 the British Association appointed to Report on Mathematical Notation
 and Printing, with the view of leading Mathematicians to prefer, in
 optional cases, such forms as are more easily put into type, and of
 promoting Uniformity of Notation, xx, 355.
- "MATHEMATICS OF LIFE INSURANCE"** (C. L. Landré). *Review* by F. E.
 Colenso, xxxvii, 107.
- MATHEWS (G. S.).** The Problem of Copyhold Fine Enfranchisement, xxviii, 1.
 Reference, E. Smyth, xxviii, 67.
- MAURICE (F.).** On Interpolation: an Essay containing a Simple Exposition of
 the Theory in its Most Useful Practical Applications, together with a
 General and Complete Demonstration of the Methods of Quintisection
 of Briggs and Mouton for Equal Intervals; and of the Process explained
 by Newton in his "Principia" for Intervals of any magnitude whatever.
 Translated from the *Connaissance des Temps* for 1847 by T. B.
 Sprague and J. H. Williams, xiv, 1. Reference (Editorial), xiv, 88.
- MAXIMUM MORTALITY PERCENTAGES**, T. B. Macaulay, xxxii, 117; T. B.
 Sprague, xxxii, 197; J. Chatham, xxv, 236.
- MAY (B.) and DUNN (S. G.).** Tables of the Values of Continuous Temporary
 Annuities for the Valuation of Endowment Assurances in Groups:
 OM Mortality, $2\frac{1}{2}$ and 3 per-cent interest, xxxviii, 51.
- MEAN DURATION METHOD** of Deducing Rates of Mortality and Withdrawal,
 T. G. Ackland, xxxiii, 81, 150. See also **Discontinuances**.
- MECHANICAL AIDS TO CALCULATION**, W. T. Thomson, iv, 232; (of Dxg)
 J. Henry, xiv, 212; J. A. Robertson, xxxii, 160.
- M. Thomas' (de Colmar) Arithmometer, J. C. Hamyington, xvi, 244;
 E. Sang, xvi, 253; W. J. Hancock, xvi, 265.
- "The Simplification of Calculations by Mechanical and Graphical Pro-
 cesses" (M. d'Ocagne). *Review* by W. R. Strong, xxxix, 377.
- MECHANICAL APPLIANCES** used in American Mortality Investigation, D. P.
 Fackler, xxxvii, 10.
- MEDICAL ESTIMATE** of Life for Life Insurance, Treatise on the, Dr. S. H. Ward,
 viii, 248, 329. Letter as to the Authorship of this work, J. Fraser,
 viii, 357.
- MEDICAL EXAMINERS.** And their Functions, J. Chisholm, xxv, 419, 431.
- (Local). On the Position of Life and other Insurance Associations in
 Relation to them, C. Walford, xxii, 153. References, Dr. J. F. Arldige,
 xxii, 180; T. B. Sprague, xxii, 184; G. S. Crisford, xxii, 188.
- MEDICAL FEES** Paid by Life Assurance Companies, "M.C.I.A.", i, 92*.
- MEDICAL REPORTS** in Use by British Life Offices, Analysis of Forms of, J.
 Chisholm, xxv, 411.
- "MEDICAL STATISTICS OF LIFE ASSURANCE"** (Dr. J. Begbie). *Review*,
 iv, 76.

- MEDICAL STATISTICS** of Life Assurance Companies, On, H. W. Porter, iv, 256.
- MEECH (LEVI W.).** Extract from Letter to W. M. Makeham as to the Graduation of the American Life Table: Males, xv, 410.
- "System and Tables of Life Insurance." (Experience of Thirty American Companies.) G. H. Ryan, xxiv, 288, xxvi, 250, 275, xxviii, 221, xxxii, 14; T. B. Sprague, xxvi, 316; J. Chatham, xxix, 120; R. R. Tilt, xxxii, 9; Errata and Addenda, xxxii, 71. *See also* **Final Series.**
- MEIKLE (J.).** On the Theory of Progressive Mortality and its Application to Valuations, iii, 277.
- On a Method of Obtaining the Value of a Life Annuity at One Rate of Interest from the Value at another Given Rate, iii, 325.
- An Approximation to the Rate of Interest in a Life Annuity, iv, 134.
- Determination of the Rate of Interest in an Annuity, the Mortality Table and Age being given, v, 152. Reference, A. De Morgan, viii, 67.
- Formula for Change of Premium on an existing Assurance from Whole of Life to Limited Payment Scale, v, 154.
- On the Interpolation of Logarithmic Series, vi, 200.
- On the Commutation Tables recently (1858) published by D. Chisholm, vii, 297.
- On the Calculation of Survivorship Annuities by the Columnar Method, xi, 40.
- On the Value of a Policy, xi, 241.
- On Determination and Distribution of Profits, xi, 251. Reference, M. B. Pell, xiv, 391.
- On the Arrangement of Data furnished by certain Life Assurance Companies in Scotland, and on the Formation of Tables, &c., therefrom; being Contributions towards the Ascertainment of the Rate of Mortality of Assured Lives, xiii, 261. Reference, W. J. H. Whittall, xxxi, 175.
- On the Additional Premium required for Residence in Foreign Climates, xix, 268.
- Policy Life Lines: Relation of Tables of Mortality to Values of Policies, xxiii, 385. References, T. B. Sprague, xxi, 105; G. King, xxi, 114.
- On a Mode of Tabulating the Facts for the purpose of Ascertaining the Numbers Exposed to Risk, and Calculating the Rate of Mortality experienced by Assurance Companies", xxxi, 229. Reference, T. G. Ackland, xxxiii, 70.
- "Observations on the Rate of Mortality of Assured Lives as Experienced by Ten Assurance Companies of Scotland." References, C. Walford, xix, 199; W. R. Dovey, xxiii, 286; G. H. Ryan, xxvi, 275; W. J. H. Whittall, xxxi, 175.
- "On the Official Publications of the Mortality of Assured Lives" (Inaugural Address extracted from the "Transactions of the Actuarial Society of Edinburgh", Session 1884-85). (*Notice of Publication*), xxv, 368. References, J. Chatham, xxix, 91; P. L. Newman, xxix, 476.
- "Report on the Ministers' Widows' Fund (Church of Scotland), 1875", T. B. Sprague, xxii, 353.
- Reference to his Formula for "Exposed to Risk", G. H. Ryan, xxvi, 257.
- "MEMOIR OF AUGUSTUS DE MORGAN"** (by his Wife). *Review* by C. D. Higham, xxv, 137.
- MERRIFIELD (C. W.).** Formula for Approximating to the Rate of Interest in Immediate Annuities, iii, 324. Errata, iii, *inset*.
- On the Average Duration of Human Life, as appearing from the Census Tables and the Registrar-General's Returns of Births and Deaths, vi, 175.
- On (Factor) Formula for using Tables of Logarithms, vi, 298.
- MESSINGER LEGACY.** Notice of, vi, 239.
- MESSINGER PRIZES.** Council Resolve to apply Interest accrued on Mr Messinger's Bequest towards Purchase of a Prize to be Competed for by the Associates, vii, 359.
- See also* **Institute of Actuaries, Prizes.**
- METHOD OF DIFFERENCES.** *See* Differences.
- METHODS OF COMPUTATION.** *See* Computation.
- METHODS OF VALUATION.** *See* Valuation of Life Policies.
- METRIC SYSTEM** of Weights and Measures, On the, S. Brown, vii, 42, xi, 263; Sir C. W. Pasley, vi, 250; L. Levi, x, 340.

- MIGRATIONS.** On their Effect in Disturbing Local Rates of Mortality, T. A. Welton, xvi, 153.
- MILITARY OPERATIONS.** On the Mortality arising from, W. B. Hodge, vii, 80, 151, 201, 275.
- MILITARY RISKS.** Premiums, A. H. Smee and T. G. Ackland, xxxiv, 358.
- MILLER (T.).** *Fire Insurance Theory of Statistics*, xxii, 103.
- MILNE (J.).** His Formulas for Successive Lives, References, A. De Morgan, iv, 278; T. Weddle, xiii, 221.
- On the Advantages of the Modern Methods of Computation in Life Assurance Calculations adopted by, viii, 118. Reference, I. C. Pierson, xxxiii, 36.
- Quotation from his Article, "Mortality, Human" in the *Encyclopædia Britannica* as to the Equitable Mortality Table, by W. Spens, x, 67. Reference, M. N. Adler, xxiv, 123.
- Remarks on his Compound Survivorship Problems, W. M. Makeham, x, 241.
- Note as to his Problems XVII and XXVII, P. Gray, xii, 177.
- Remarks on his Demonstration of the Values of Annuities Payable Half-yearly, &c., T. B. Sprague, xiii, 189.
- Correction of an error in his Treatise on Annuities and Assurances, H. Hoskins, xvii, 192.
- Method of Graduation, A. F. BurrIDGE, xxiii, 320; W. Sutton, xxiv, 110; G. King, xxiv, 186.
- See also *Carlisle Table and Graduation*.
- MINASI (F. J.).** Notice of his objections to Decimal Coinage, C. Jellicoe, v, 296. Mr. Minasi's reply, vi, 57.
- MINERS.** Mortality and Accidents among, and Re-marriage among their Widows, T. Y. Strachan, xxvii, 48.
- Sickness amongst, A. W. Watson, xxxv, 304.
- MINES.** Mortality in. Extract from the Newcastle *Daily Chronicle*, viii, 345.
- Casualties in Prussia and Belgium, iii, 166.
- Remarks by H. W. Porter, ix, 161.
- MITCHELL (Sir A.).** Statistics of Insanity in Scotland (reprinted from the *Journal of Mental Science*, January 1877), xxviii, 426.
- Study of the Death Rate of Persons in Asylums (reprinted from the *Journal of Mental Science*, April 1879), xxviii, 432.
- MODEL OFFICE.** H. W. Manly's, xiv, 292, xx, 275; J. Valentine's, xviii, 229; W. Sutton's, xx, 192; G. King's, xx, 234, xxxvii, 456, xl, 1; W. T. Gray's, xx, 309. References, W. Sutton, xx, 209; G. King, xx, 300; D. C. Fraser, xxxviii, 386, xl, 122; J. Buchanan, xxxix, 257.
- On the Estimated Liability of a Life Office calculated by means of a, D. Carment, xxi, 74. See also J. Chisholm, xxvii, 442.
- For Annuities, G. H. Ryan, xxx, 191.
- Bonuses and their relations to Reserves in Valuations of a, J. Buchanan, xxxix, 257.
- MODEL TABLES** of Force of Mortality, &c. (Makeham's Formula), H. P. Calderon, xxxv, 157.
- MODELS OF POLICY VALUES,** J. Chisholm, xxv, 141.
- MODIFIED NEAREST DURATION METHOD,** T. G. Ackland, xxxvii, 494; R. Todhunter, xxxviii, 357. See also *Discontinuances*.
- MOIR (H.).** On the Rationale of Discounted-Bonus Premiums (J. Chisholm Prize Essay, 1900), xxxvi, 4.
- MOLYNEUX (A. E.).** The Various Classes of Assurance Business, xxviii, 251.
- MONEY MARKET,** The, 1853, C. Jellicoe, vi, 45.
- "MONTHLY INSURANCE JOURNAL"** of Philadelphia (Harvey Tuckett's), iii, 289.
- MOORE (R. M.).** On the Comparative Mortality among Assured Lives of Abstainers and Non-Abstainers from Alcoholic Beverages, xxxviii, 213. References, G. J. Lidstone, xxxviii, 273; Dr. A. Newsholme, xxxviii, 348.
- MOORS (E. M.) and DAY (W. R.).** On the Rates of Mortality in New South Wales and Victoria, and the construction of a Mortality Table from a Single Census and the Deaths in the years adjacent thereto, xxxvi, 151.

MORAL HAZARD IN INSURANCE. Extract from the *Insurance Monitor* of New York, xxiii, 222.

MORGAN (A.). Mortality Experience of the Equitable Society, J. Chatham, xxix, 113.

MORGAN (W.). Quotation from his Equitable Mortality Experience, W. Spens, x, 66.

— Letter to the *Times*, 1828, in reply to F. Baily's letter regarding C. Babbage's publication as to the Equitable Society, x, 311.

— "The D, N, &c., Columns of the Equitable Experience" (letter communicating tables calculated from the Equitable Experience, Table A, 3 per-cent, D, N, S, M, R, a, A, π), xii, 235.

MORTALITY.

(1.) *Experience of Various Offices.*

American Life Companies (34) upon 98 Special Classes of Risks, Compiled and Tabulated by the Actuarial Society of America, New York, 1903. *Review* by J. D. Watson, xxxviii, 363.

Amicable. References, S. Brown, ii, 202, iv, 283; C. Jellicoe, iv, 201; W. J. H. Whittall, xxxi, 168.

Australian Mutual Provident Society (Deaths from Cancer), R. Teece, xxxvi, 103. Reference, G. King, xxxvi, 105.

Barbados Mutual, G. F. Hardy and H. J. Rothery, xxvii, 163. Reference, W. J. H. Whittall, xxxi, 182.

Berlin Widows' Fund, Males and Females, by Brune, iii, 30; adjusted by Dr. T. Wittstein, xvii, 432.

British Empire (Bonus Policies), G. F. Hardy, xxiii, 1.

— (Cancer Mortality), G. King and Dr. A. Newsholme, xxxvi, 124.

British Offices Experience, 1863-1893, *Reviews* by A. Levine, xxxv, 147, 484.

— R. P. Hardy, xxxvi, 315, xxxvii, 147; T. G. Ackland, xxxvii, 113; G. F. Hardy, xxxvii, 175-179, xxxviii, 501.

Canada Life, A. W. Tarn, xxxiv, 542; M. D. Grant, xl, 126.

Clergy Mutual, T. B. Sprague, xxvi, 317.

Clerical, as to Invalid Lives, G. H. Pinckard, i, 273.

Clerical, Medical and General Life Assurance Society, W. J. H. Whittall, xxxi, 161.

Connecticut Mutual Life. *Notice of Publication*, D. H. Wells, xxv, 368.

References, G. H. Ryan, xxvi, 254, 275, xxviii, 221; B. Newbatt, xxvii, 191; J. Chatham, xxix, 85, 122; W. J. H. Whittall, xxxi, 181; T. B. Sprague, xxxi, 225.

Eagle, C. Jellicoe, iv, 199. References, S. Brown, iv, 283; C. Walford, xix, 187; J. Chatham, xxix, 97. Graduated by W. M. Makeham, vi, 359. Table showing the intensity of Diseases among the Lives assured, as compared with that affecting the general population of London, C. Jellicoe, v, 349. As regards unsound lives, G. Humphreys, xviii, 178.

Economic, J. J. Downes, vii, 78. References, J. Chatham, xxix, 81; W. J. H. Whittall, xxxi, 171.

Equitable. References, S. Brown, ii, 202, iii, 29, iv, 283; J. A. Higham, xx, 1; J. Chatham, xxix, 113.

Essex Provident (1876-80), G. F. Hardy, xxvii, 285.

French Companies (Assured Lives and Annuitants), G. F. Hardy, xxxiii, 485.

French and German Companies (Female Lives), G. H. Ryan, xxix, 71.

General Annuity Trust Fund (Female Nominees), G. King, xxxiii, 262.

German Offices (Twenty-three), P. L. Newman, xxix, 476.

Gotha (extract from Report, 1853), v, 60; G. Hopf, v, 324, vi, 1, ix, 48. As given by F. G. P. Neison Sr. in *Statistical Journal* and quoted by W. Spens, iv, 4. References, S. Brown, ii, 203; D. A. Bunsted, xxiv, 68; J. Chatham, xxix, 122; T. B. Sprague, xxxi, 226. Causes of Death, xx, 127.

— (1829-1878), *Review* by T. E. Young and W. R. Strong, xxxviii, 292.

Gresham, Austrian (1865-1874), F. A. Curtis, xix, 242.

Hanover, Dr. T. Wittstein, xvii, 426.

Jamaica Mutual (extract from Report, 1854), v, 70.

MORTALITY. (1.) *Experience of Various Offices—continued.*

- London Assurance Corporation (in respect of Extra Risks), A. H. Bailey, xxiv, 321.
- Marine and General Mutual, G. H. Ryan, xxvi, 413.
- Mutual Life Assurance Society (as to Consumptive Lives), H. W. Manly, xxx, 98; Dr. T. G. Lyon, xxx, 121; T. B. Macaulay, xxx, 336.
- National of Rotterdam (1863-1873), D. J. A. Samot, xix, 250.
- New Jersey Mutual Benefit (Persons Living and Deaths), viii, 192. Adjusted by W. S. Nichols, xix, 28.
- New York Mutual (1851), C. Gill, iii, 300, viii, 196, 200. Reference, S. Brown, ii, 203. Fifteen years (1813-1858), S. Homans, viii, 200. Reference, C. F. McCay, xvi, 20.
- New Zealand Government Insurance Department (1871-80), xxiii, 443.
- Norwegian General Widows' Fund. *Review* by O. Schjoll, xxviii, 89.
- Pole Star Life, of Stockholm. *Review* by T. B. Sprague, xxvi, 471, xxvii, 155.
- Provident Life and Trust Company of Philadelphia. *Review* by T. B. Sprague, xxvi, 316; G. H. Ryan, xxviii, 221.
- Published Experience of Several Life Offices (namely: Equitable, Amicable, Scottish Amicable, Institute of Actuaries, New York Mutual, Thirty American Offices, Gotha and Connecticut Mutual), J. Chatham, xxix, 113.
- Scottish Amicable, W. Spens, x, 61, 197. Reference, T. B. Sprague, xv, 340. Ditto as to Publicans, &c., J. Stott, xx, 35.
- (West Indies), J. Stott, xxi, 153. Reference, G. F. Hardy and H. J. Rothery, xxvii, 163.
- Scottish Equitable. Reference, C. Walford, xix, 197. Female Lives, T. B. Sprague, xxxi, 205, 226.
- Scottish Offices (Ten). References, C. Walford, xix, 199; W. R. Dovey, xxiii, 286; G. H. Ryan, xxvi, 275. *See also* J. Meikle, xiii, 261.
- Scottish Widows' Fund, i, 81*. Causes of Death, *Review*, iv, 76; G. King, xxx, 126. Deaths from Cancer, G. King and Dr. A. Newsholme, xxxvi, 139.
- Seventeen Offices. References, S. Brown, ii, 203, iv, 284; W. Spens, x, 197. Construction of Table Explained by W. S. B. Woolhouse, xiii, 75.
- Standard. Causes of Death. *Review* by Sir R. Christison, iv, 76, xix, 59. *See also* J. O. McWilliam, ii, 54.
- West Indies Experience, G. F. Hardy and H. J. Rothery, xxvii, 163.
- Twenty Offices. References, T. B. Sprague, xv, 328, xx, 95; G. W. Berridge, xix, 351; G. King, xix, 381, xx, 233; J. Chatham, xxiv, 118; W. J. H. Whittall, xxxi, 175.
- Union Mutual (Portland, Maine). *Review* by Dr. T. A. Foster, xxv, 251.
- United Kingdom Temperance and General Provident Institution (1841-1901), R. M. Moore, xxxviii, 213.
- Washington Life. *Review* by G. H. Ryan, xxviii, 220. As to Consumptive Lives, H. R. Harding, xxx, 129; T. B. Macaulay, xxx, 336.

(2) *Observations as to the Rate of Mortality in different countries.*

- Africa, Coast of (Officers and Crews of H.M. Ships), i, 83.
- Certain Parts of, A. E. Sprague, xxxiii, 285.
- Ashanti Expedition (Officers), xix, 212.
- Government Officials on West Coast of Africa, J. R. Hart, xxxiii, 307.
- Imperial Forces engaged in the War in South Africa, 1899 to 1902, F. Schooling and E. A. Rusher, xxxvii, 545.
- West, L. K. Pagden, xxxiii, 359; A. Levine, xxxiii, 516. (Among Government Officials), J. R. Hart, xxxiii, 307.
- Europeans in Tropical, T. B. Sprague, xxv, 437.
- America, Mortality Investigation instituted by the Actuarial Society of, D. P. Fackler, xxxvii, 1.
- American Assured Lives, S. Brown, viii, 184; E. Wright, ix, 276.
- Committee on Vital Statistics, Reports, viii, 273, ix, 235.
- Law of Insured Life, W. S. Nichols, xix, 28.
- Australasia, Annual Death Rate (1871-79), A. F. BurrIDGE, xxiii, 314.
- Average Annual Death Rates from Cancer, per million of mean population, R. Teece, xxxvi, 102.

MORTALITY. (2.) *Observations as to the Rate of Mortality in different countries—continued.*

- Australia, A. F. BurrIDGE, xxiv, 333.
 — Children under five years of age, in Victoria (1866-71), A. F. BurrIDGE, xxiii, 317; (1870-71), A. F. BurrIDGE, xxiv, 338. In Victoria, New South Wales and Queensland (1870-81), A. F. BurrIDGE, xxiv, 345.
 — Emigrants to, J. J. McLACHLAN, xviii, 381.
 — New South Wales, M. B. PELL, xxi, 257; A. F. BurrIDGE, xxiii, 314, xxiv, 341; E. M. MOORS and W. R. DAY, xxxvi, 151.
 — New Zealand, J. MEIKLE, xix, 290; F. W. FRANKLAND, xxiv, 211.
 — Victoria, A. F. BurrIDGE, xxiii, 309, xxiv, 336; E. M. MOORS and W. R. DAY, xxxvi, 151.
 Austria, Jews in, T. B. SPRAGUE, xxvii, 155. *See also* **Mortality** (1), **Gresham**.
 Breslau Population, Dr. E. HALLEY, i, 45, xviii, 251, 262.
 California. *See* **Mortality** (2), **United States**.
 Canada, G. H. RYAN, xxxii, 41.
 — Vital Statistics, M. D. GRANT, xl, 125.
 Colonies, Total Abstainers in, A. W. TARN, xxxiv, 541.
 Denmark, Danish Clergy, H. WESTERGAARD, xxiii, 29, 40.
 Dublin, Early Bills of Mortality in, W. R. WILDE, iii, 248.
 East Indies, Troops in, i, 79.
 — A. W. TARN, xxxiv, 528.
 — (Bombay, Madras, and Bengal), J. MEIKLE, xix, 284.
 — Children under five years of age, G. F. HARDY, xxv, 222.
 — Europeans in, S. BROWN, xi, 1, xii, 276; J. MEIKLE, xix, 281; T. B. SPRAGUE, xix, 295; Ditto, being Subscribers to the Uncovenanted Service Family Pension Fund and their Nominees, A. J. FINLAISON, xviii, 153; S. C. THOMSON, xxi, 180. *See also* vi, 15, xix, 223.
 — European Troops in, i, 79; European and Native Troops in Madras, v, 245.
 — Military Officers in Bengal, C. JELlicoe, i, 166.
 — Natives, S. BROWN, xvi, 187; G. F. HARDY, xxv, 217, 225, 238.
 — Proclaimed Clans (North-West Provinces of India, 1876-1882), G. F. HARDY, xxv, 223.
 England, Labouring Classes of, T. R. EDMONDS, v, 127.
 — Rural Districts, 1836-40 (NEISON), G. F. HARDY, xxvii, 285.
 — and Wales, Fluctuations in the Rate of Mortality, G. B. LONGSTAFF, *Review* by A. F. BurrIDGE, xxix, 459.
 — Decline in Death Rate, N. A. HUMPHREYS, xxvii, 486.
 France. Assured Lives and Annuitants, G. F. HARDY, xxxiii, 485.
 Germany, Germans in the Franco-German War, 1870-71, A. H. SMEE and T. G. ACKLAND, xxxiv, 384-5.
 — Ratio of Mortality in 1000 before 1796 and in 1852-4, vii, 44.
 — (Frankfort-on-Main). Deaths from Cancer, G. KING and Dr. A. NEWSHOLME, xxxvi, 148-150.
 Greece, Greek Clergy, D. A. BUMSTED, xxiii, 35.
 Holland, National Life Insurance Company of Rotterdam (1863-73), xix, 250.
 India. *See* **Mortality** (2), **East Indies**.
 London, B. SMITH, iii, 252, iv, 262. London and the Surrounding Country, T. A. WELTON, xvi, 153.
 Norway, Norwegian General Widows' Fund, O. SCHJOLL, xxviii, 89.
 Prussia, Clergy, D. A. BUMSTED, xxiii, 35.
 — Widows' Fund (Bruner), S. BROWN, iii, 29.
 Scotland, On the Arrangement of Data furnished by certain Life Assurance Companies in, and on the Formation of Tables, &c., therefrom, J. MEIKLE, xiii, 261.
 — Infants in, Dr. W. ROBERTSON, xxii, 140.
 — Insane Persons in, Sir A. MITCHELL, xxviii, 426, 432.
 — Scottish Banks' Widows' Funds, A. HEWAT and J. CHATHAM, xxxi, 428.
 Sweden, Pola Star Life Insurance Company of Stockholm, T. B. SPRAGUE, xxvi, 471, xxvii, 155.
 United States, S. BROWN, xiii, 272.
 — and California, iii, 300.

MORTALITY. (2.) *Observations as to the Rate of Mortality in different countries—continued.*

West Indies, European Troops in, i, 79.

— Assured Lives in, S. C. Thomson, xxi, 181; (Chiefly Barbados), G. F. Hardy and H. J. Rothery, xxvii, 161.

— (Scottish Amicable), J. Stott, xxi, 153.

— Jamaica, Europeans and their descendants in, J. Marshall, iv, 39.

See also **Foreign Intelligence and Mortality (1).**

(3.) *Observations amongst different Classes and Occupations.*

Abstainers, and Non-Abstainers compared (Assured Lives), R. M. Moore, xxxviii, 213.

— in the Colonies, A. W. Tarn, xxxiv, 541.

Acclimatised Lives in the Tropics, G. F. Hardy and H. J. Rothery, xxvii, 180; B. Newbatt, xxvii, 190; T. G. C. Browne, xxvii, 191.

Army. See **Mortality (3), Military and Naval Lives.**

Assured Lives, American, S. Brown, viii, 184; E. Wright, ix, 276.

— Law of, W. S. Nichols, xix, 28.

— As Influenced by Length of Time for which they have been Assured, T. B. Sprague, xv, 328. In Connection with the Requisite Reserves of Life Offices, G. King, xix, 381, xx, 233. See also **Mortality (1) and Select Lives.**

Bonus Policies (British Empire), G. F. Hardy, xxiii, 1. (Washington Life Insurance Company), G. H. Ryan, xxviii, 226.

Brune's Table (Males), xxiv, 166.

Children under five. See **Mortality (2), Australia, East Indies.**

Clergy, Rev. J. Hodgson, S. Brown, xvii, 339. D. A. Bumsted, xviii, 343.

See also **Mortality (2), Denmark, Greece, Prussia.**

Clerks' Associations, T. G. Ackland, xxxiii, 68, 164.

Consumptive Lives, H. W. Manly, xxx, 113; Dr. T. G. Lyon, xxxi, 155; H. Westergaard, xxxi, 375. See also **Mortality (1), Mutual Life.**

Diseases, Different Classes of, Influence of Selection on, W. R. Dovey, xxiii, 285.

— In Victoria (1873), New South Wales (1873), Tasmania (1873), South Australia (1875), New Zealand (1875), A. F. Burridge, xxiii, 314; Dr. E. Symes Thomson, xxiii, 332.

— New Zealand Government Insurance Department (1871-80), xxiii, 443.

Early Manhood, A. Buchanan, vi, 67; A. G. Finlaison (quoted by H. W. Porter), ix, 280; J. W. Stephenson, xii, 181; M. N. Adler, xii, 268; A. H. Bailey, xiv, 247; C. F. McKay, xvi, 27; W. A. Bowser, xvi, 148.

Emigrants to Australia, J. J. McLauchlan, xviii, 381.

Europeans charged extra for Foreign Residence, compared with HM, J. Meikle, xix, 293.

— in Tropical Africa, T. B. Sprague, xxv, 437.

— in Various Unhealthy Districts, Dr. T. G. Lyon, xxix, 541.

Extra Risks, C. Jellicoe, vii, 131; G. H. Ryan, xxiv, 19; F. W. White and W. J. H. Whittall, xxiv, 385.

Females, In Gotha Office, G. Hopf, vi, 6. See also xix, 209 and **C. Walford, Females.**

— (4 French Companies and 23 German Companies), G. H. Ryan, xxix, 71.

— (Provident Life and Trust Company of Philadelphia), T. B. Sprague, xxvi, 318.

— (Scottish Equitable Life Office), T. B. Sprague, xxxi, 205, 226.

— Nominees of the General Annuity Trust Fund, G. King, xxxiii, 262.

Foreign climates, Persons resident in, or engaged in pursuits attended with extra risk, C. Jellicoe, vii, 131.

Friendly Societies, H. Tompkins, v, 6; T. R. Edmonds, v, 143. In France, S. Brown, v, 208.

Government Annuitants, H. W. Porter, ix, 277. Ditto, Selected, W. T. Thomson, i, 29*.

— (1883) A. J. Finlaison. Reference, W. J. H. Whittall, xxxi, 179.

Infancy and Childhood, A. Buchanan, vi, 17; H. W. Porter, ix, 155; L. Oppermann, xvi, 315; W. A. Bowser, xvii, 26.

Infants in Scotland, Dr. W. Robertson, xxii, 140.

MORTALITY. (3.) *Observations amongst different Classes and Occupations—continued.*

- Innkeepers, Publicans, &c., J. Stott, xx, 35; S. C. Thomson, xxi, 178;
 Associated Scottish Life Offices Investigation, xxxiii, 245, 252.
 Insane Persons in Scotland, Sir A. Mitchell, xxviii, 426, 432.
 Intemperate Habits, Persons of, F. G. P. Neison, Sr. *Review*, ii, 96.
 Invalid Lives (Eagle Experience, 1808–1871), G. Humphreys, xviii, 178.
 Jews in Austria, T. B. Sprague, xxvii, 155.
 Liquor Trade. *See Mortality (3), Innkeepers.*
 Males and Females, Influence of Marriage, Dr. J. Stark, xxii, 233; T. B. Sprague, xxiii, 40; H. Spencer, xxiii, 42; R. A. Proctor, xxiii, 44; Dr. W. Robertson, xxiii, 47.
 — (Relative), N. A. Humphreys, xxvii, 492.
 Mariners (Master). F. G. P. Neison's Experience, 1835–48, *Review*, i, 241.
 Reference, E. H. Galsworthy, iv, 88.
 — (Marine and General Mutual), G. H. Ryan, xxvi, 413.
 Military and Naval Lives, J. J. McLauchlan, xxxiv, 251; A. H. Smee and T. G. Ackland, xxxiv, 358.
 Military Operations, W. B. Hodge, vii, 80, 151, 201, 275.
 Miners (Coal), viii, 348. *See also* iii, 166, ix, 61.
 — Mortality and Accidents among, T. Y. Strachan, xxvii, 48.
 Naval Operations, W. B. Hodge, vi, 254.
 Navy, T. B. Sprague, xxv, 49; H. J. Rothery, xxviii, 474; J. J. McLauchlan, xxxiv, 251; A. H. Smee and T. G. Ackland, xxxiv, 358.
 Occupations, Various. Farr's and Ratcliffe's observations compared, M. N. Adler, xii, 273.
 Peerage Families, A. H. Bailey and A. Day, ix, 305; G. W. Berridge, xii, 220; Dr. T. N. Thiele, xvi, 43, 118.
 Pilots, xix, 212.
 Publicans. *See Mortality (3), Innkeepers.*
 Railway Engine Drivers and Stokers, xix, 211.
 Rural Districts, 1836–40 (Neison), G. F. Hardy, xxvii, 285.
 Select Lives, E. J. Farren, iii, 206, iv, 66, 141; W. Spens, iv, 1, 139; T. B. Sprague, xxi, 229, xxii, 391, 394. (Government Male Annuitants), A. J. Finlaison, xxii, 444; J. Chatham, xxix, 142.
 Sickneſs Societies (various), G. F. Hardy, xxvii, 290.
 — Hearts of Oak Benefit Society, R. P. Hardy, xxxi, 142. References, H. W. Manly, xxxi, 148; G. F. Hardy, xxxi, 149.
 Widows, Scottish Banks' Fund, A. Hewat and J. Chatham, xxxi, 428.
 — in receipt of relief from the Patriotic (Russian War) Fund, 1854–1900, J. Burn and J. McDonald, xxxviii, 433.
 — Prussian Fund (Brune), S. Brown, iii, 29.

(4.) *General Remarks.*

- Method of deducing the Rate of, from Table of Premiums, W. Wylie, ii, 391; G. Scott, vi, 231; H. A. Smith, vi, 297; W. Lazarus, xviii, 54, 212.
 From Cholera in England, 1848–9, Dr. W. Farr. *Review*, iii, 184.
 Progressive, J. Meikle, iii, 277; J. Reid, vi, 129.
 On a simple plan of classifying the Policies so as to form a Table of, S. Brown, iv, 282.
 How far Controllable by Human Agency, H. W. Porter, ix, 12, 89, 149.
 Comparative Mortality according to Locality, M. N. Adler, xii, 274.
 Influence of the Duration of an Assurance on the Rate of Mortality, T. B. Sprague, xv, 328.
 The Effect of Migration on Local Rates of Mortality, T. A. Welton, xvi, 153.
 On one Uniform Law of Mortality from Birth to Extreme Old Age, B. Gompertz, xvi, 329.
 Occupation, its Influence upon, F. G. P. Neison, Jr., xvii, 95.
 Rates of Mortality and their Causes, W. Lazarus, xviii, 54, 212.
 On the Method of Comparing the Expected with the Actual Experience of a Life Assurance Company, G. M. Low, xviii, 195.
 Fluctuations, J. R. Macfadyen, xviii, 416.
 Hourly Distribution of Mortality, R. Lawson, xix, 110.

MORTALITY. (4.) General Remarks—continued.

- From Peritonitis, Dr. W. Robertson, xix, 118.
 On the Collection of Data, F. A. Curtis, xix, 229.
 Valuation Reserves as affected by Increased Mortality, T. B. Sprague, xxi, 77.
 Can a Law of Mortality be Represented in a Mathematical Form? T. E. Young, xxii, 139. Reference, W. M. Makeham, xxviii, 316.
 Central Rate of (or Central Death Rate), T. B. Sprague, xxii, 86; G. King and G. F. Hardy, xxii, 192; A. F. Burrigge, xxiii, 320; G. King, xxiv, 191.
 Should Policies, Lives or Amounts be used in preparing Mortality Experience? G. F. Hardy, xxiii, 2; G. H. Ryan, xxvi, 250, xxviii, 221; J. Chatham, xxix, 82.
 Policy Life Lines: Relation of Tables of Mortality to Values of Policies, J. Meikle, xxiii, 385.
 Given P_x to deduce the Mortality Table, G. H. Ryan, xxiv, 28.
 "Mathematical Law of Mortality", Dr. T. Wittstein, xxiv, 153, xxxiii, 399. Reference, G. F. Hardy, xxxiii, 490.
 Probable Effect of Discontinuances on Mortality, W. T. Gray, xxiv, 256; F. W. Fulford, xxxv, 207.
 As Affected by Grouping Numbers Exposed to Risk at Different Ages, W. T. Gray, xxv, 369. Reference, J. Chatham, xxix, 81.
 Expected Deaths and Expected Claims, G. H. Ryan, xxvi, 249. Extract from *Insurance Record*, xxvi, 274.
 Policy Year and Calendar Year Methods of arranging Observations for Mortality Experience, G. H. Ryan, xxvi, 258, xxviii, 221; A. H. Bailey, xxvi, 268; H. W. Manly, xxvi, 272; J. Chatham, xxix, 87, 94; W. J. H. Whittall, xxxi, 163.
 Rate of, according to Sum Assured, N. B. Gunn, xxvi, 274.
 Rate of, how Affected by Changes in the Rate of Sickness in Friendly Societies, G. F. Hardy, xxvii, 307.
 Methods of Deducing Mortality Experience, J. Chatham, xxix, 110, 173; W. J. H. Whittall, xxxi, 161.
 On the Tabulation of the Facts Extracted from the Records of a Life Office for the purpose of Investigating its Mortality Experience, T. B. Sprague, xxxi, 205.
 Method of Treating Duplicate and Revived Policies in a Mortality Investigation, T. B. Sprague, xxxi, 207.
 Nearest Duration, Exact Duration, Final Age, and Institute Methods of Tabulating the Facts in a Mortality Investigation, T. B. Sprague, xxxi, 208, 213, 215, 217.
 The Year "0" of Assurance in the Institute Experience, 1863, T. B. Sprague, xxxi, 220.
 Mode of Tabulating the facts for the purpose of calculating the Rates of Mortality in Assurance Companies, J. Meikle, xxxi, 229.
 On the Treatment of Incomplete Years of Exposure in a Mortality Experience derived from Records of Assured Lives, G. J. Lidstone, xxxi, 304.
 Maximum Percentages, T. B. Macaulay, xxxii, 117; T. B. Sprague, xxxii, 197; J. Chatham, xxxv, 326.
 On the Books and Forms to be used in scheduling the particulars of the risks of a Life Assurance Company under its assurance and annuity contracts for periodical or interim valuations, distribution of surplus, and for investigation of the rates of, J. Chatham, xxxii, 393.
 On Rates of Mortality and Withdrawal, T. G. Ackland, xxxiii, 362.
 Mortality Tables and Frequency Curves, G. F. Hardy, xxxiii, 530.
 Methods of Analysing and presenting the Mortality Experience of Friendly Societies, A. W. Watson, xxxv, 268.
 Cancer, Tables showing Deaths from, R. Teece, xxxvi, 98; G. King and Dr. A. Newsholme, xxxvi, 138.
 Requirements for a Mortality Experience, E. M. Moors and W. R. Day, xxxvi, 153.
 Comparative influence of Small-pox on, A. F. Burrigge, xxxvii, 255.
 Variations in the Rate of Mortality and their effect upon Pure Premium Policy-Values, G. J. Lidstone, xxxix, 209.

Force of. See **Force of Mortality**.
 See also **Graduation**.

MORTALITY (Increased). *See* Increased Mortality.

"MORTALITY AND INSURANCE", (Dr. H. Scheffler). *Review*, xv, 292.

"MORTALITY FROM CHOLERA IN ENGLAND", 1848-9, (Dr. W. Farr). *Review*, iii, 184.

MORTALITY TABLES, (Construction of. *See* A. Quetelet, iv, 27; S. Brown, iv, 282; Dr. W. Farr, ix, 124, 188; W. M. Makeham, xii, 305, xvi, 344; W. S. B. Woolhouse, xiii, 75; J. Meikle, xiii, 261, xxxi, 229; M. von Baumhauer, xvi, 34; W. Sutton, xvi, 446; S. C. Chandler, Jr., xvii, 161; T. B. Sprague, xxi, 229, 406, xxii, 391, xxxi, 217; M. B. Pell, xxi, 257; J. C. Hannyngton, xxi, 455, xxii, 136; A. F. BurrIDGE, xxiii, 309, xxiv, 339; G. J. Lidstone, xxxi, 304; T. G. Ackland, xxxiii, 68; E. M. Moors and W. R. Day, xxxvi, 151. *See also* Construction of Tables and Graduation.

— The First, E. J. Farren, i, 40.

— Hubbard's Benefit Societies (France), iii, 59.

— Orchard's Theoretical Table, P. Gray, vi, 181.

— Farr's Healthy Districts, ix, 204.

— American, On, C. F. McKay, xvi, 20.

— Peerage Females, Dr. T. N. Thiele, xvi, 43, 118.

— Northampton, W. Sutton, xviii, 107.

— *qz*, Northampton, Carlisle, Equitable, HM, T. B. Sprague, xxi, 79.

— Indian Uncovenanted Service Family Pension Fund, A. J. Finlaison, xviii, 156, 167.

— Breslau (Dr. E. Halley's) xviii, 251, 262. References, E. J. Farren, i, 40; F. Hendriks, i, 14*, ii, 255; Dr. Gouraud, ii, 255; Dr. W. Farr, xviii, 264.

— Farr's Table, English Life, No. III, 1838-54, G. King, xxi, 284; N. A. Humphreys, xxvii, 493.

— Combined Marriage and Mortality, T. B. Sprague, xxi, 406.

— English Life Table, No. I, Healthy English Table, Peerage Table (Victoria and New South Wales), A. F. BurrIDGE, xxiii, 319.

— English Life Table, No. I, Graduation of, by the graphical Method, A. F. BurrIDGE, xxiii, 323.

— Gotha Life Insurance Company (Males), adjusted and unadjusted, D. A. Bumsted, xxiv, 68.

— Carlisle Table, W. Sutton, xxiv, 110; G. King, xxiv, 186.

— Employed by Life Insurance Companies in the Valuation of their Annuity Contracts. (*Notice of Publication*), G. H. Ryan, xxv, 368.

— Should they be based on the Rates of Mortality or Rates of Loss? G. H. Ryan, xxvi, 250.

— English Life Table, No. IV, xxvii, 486. Reference, J. Chatham, xxix, 140.

— New English Life Table, 1876-80, N. A. Humphreys, xxvii, 493.

— For Widowers, J. Chatham, xxviii, 384.

— (Clergy), Rev. J. Hodgson's, F. B. Wyatt, xxviii, 489.

— English Life Tables. Nos. III and IV, xxix, 28.

— Consumption, Lives with Family History of, H. W. Manly, xxx, 113.

— Staff Pension Funds. (Hypothetical Experience), H. W. Manly and E. C. Thomas, xxxvi, 260-262.

— Staff Pension Funds for Widows and Orphans (Hypothetical Experience), H. W. Manly and H. Foot, xxxviii, 138.

— British Offices, 1893, Whole-Life Assurances, Without Participation in Profits—Male Lives, xxxviii, 512.

— British Offices, 1893, O³⁰. On their application to the Valuation of Whole-Life Policies, G. King, xl, 1; O. F. Diver, xl, 15; T. G. Ackland, xl, 42.

— English Life Tables, Nos. III and V. Reference, G. King, xl, 148.

— On a form of Spurious Selection which may arise when they are amalgamated, W. P. Elderton, xl, 221.

See also Graduation.

MORTGAGES, as investments for Life Offices, S. Brown, vii, 245, 247.

— Observations on, D. Pitcairn, xix, 369.

— Of Reversionary Interests, H. Godefroi, xxv, 55.

— Percentage of, to Total Assets of Life Assurance Companies, 1882-86, A. Day, xxvi, 174; A. G. Mackenzie, xxix, 197.

— A. R. Barrand, xxxiii, 207.

MORTGAGES — *continued.*

- Syllabus of Lectures on the Law of, by W. G. Hayter, xxxv, 489.
- Law of, Course of Lectures by W. G. Hayter. *Review* by J. E. Faulks, xxxvi, 287.
- Of Expectancies under Wills, J. R. Hart, xxxix, 252.
- Of Life Policies. *See* **Assignment of Policies.**

MOUNTCASTLE (H.). On a Table for facilitating the Valuation of absolute Reversions, xv, 148.

MOUTON'S METHOD OF INTERPOLATION. *See* **Interpolation (Mouton's Method).**

MULTIPLE ANNUITIES. *See* **Annuities (Multiple).**

MULTIPLICATION. By aid of a Table of Single Entry, J. J. Sylvester, iv, 236.
See also S. L. Laundy, vi, 121, ix, 112.

— Mental, W. H. Oakes, x, 326.

MULTIPLICATION AND DIVISION, On a New Method of performing approximately certain operations in, J. A. Robertson, xxxii, 160.

MUTUAL ASSESSMENT. A. Day, xxvi, 176; H. W. Manly, xxvi, 182; W. Sutton, xxviii, 417; A. Hendriks, xxx, 283. *See also* **Tontine.**

MUTUAL BENEFIT LIFE INSURANCE COMPANY OF NEW JERSEY, Mortality Experience, viii, 192. Adjusted by W. S. Nichols, xix, 28.

MUTUAL LIFE ASSURANCE SOCIETY, Experience of (Lives with Consumptive Family History), H. W. Manly, xxx, 98; Dr. T. G. Lyon, xxx, 121; T. B. Macaulay, xxx, 336.

MUTUAL LIFE INSURANCE COMPANY OF NEW YORK, An account of the Editorial, xiv, 322.

NASH (W. O.). *Review:* —

— "The Companies Acts." A Course of Lectures by A. C. Clauson, xxxv, 49.

NATAL. *See* **Colonial Intelligence.**

NATIONAL DEBT. "On the loans raised by Mr. Pitt during the first French War, 1793-1801; with some statements in defence of the Methods of Funding" (W. Newmarch). *Review*, v, 256.

— Of Seven Great Powers, Dr. W. Farr, vi, 154.

— A. J. Finlaison, xxxi, 425.

NATIONAL DEBT OFFICE, Deferred Annuities, J. W. Stephenson, x, 44, xii, 178, 302, xiii, 114.

NATIONAL LIFE INSURANCE COMPANY OF ROTTERDAM, Mortality Experience (1863-1873), D. J. A. Samot, xix, 250.

NATIONAL PROVIDENT INSURANCE, Report of the Parliamentary Committee, xxvi, 480.

— Extract from *Quarterly Review*, xxviii, 131; R. P. Hardy, xxx, 79.

— Canon Blackley's Scheme, J. Nicoll, xxxiv, 225.

"**NATIONAL REVIEW**", *Extract from:* —

— On Decimal Coinage, A. De Morgan, vi, 75.

"**NATURE**", *Extract from:* —

— Method of Quarter Squares, J. W. L. Glaisher, xxviii, 227.

NAVAL OPERATIONS, On the Mortality arising from, W. B. Hodge, vi, 254.

NAVAL RISKS, Premiums, A. H. Smee and T. G. Ackland, xxxiv, 358.

NAVY, Rate of Mortality in, T. B. Sprague, xxv, 49; H. J. Rothery, xxviii, 474.

NAVY AND ARMY (British), Mortality among Officers and Crews of H.M. Ships on Coast of Africa, i, 83.

— On the Mortality in, as shown by the Official Reports, J. J. McLauchlan, xxxiv, 251.

NAYLOR (J.). The Theory of Constant Coefficients, xxiii, 420.

NEAREST DURATION METHOD of tabulating the facts in a Mortality Experience, T. B. Sprague, xxxi, 208; T. G. Ackland, xxxiii, 81.
See also **Modified Nearest Duration Method and Discontinuances.**

NEAVES (Lord). Extract from his Opening Address as President of Section F. (Economic Science and Statistics), at the Meeting of the British Association in Edinburgh, 1871, xvii, 63.

NEGATIVE VALUES. *See* T. B. Sprague, xvi, 399; J. J. W. Deuchar, xix, 97; J. R. Macfadyen, xix, 142; J. M. McCandlish, xx, 29; W. T. Gray, xx, 73, 150, 309; G. King, xx, 148.

— Extract from *Insurance Monitor*, New York, xxii, 132.

— In Friendly Societies, G. F. Hardy, xxvii, 319.

- NEISON (F. G. P., Sr.).** What are the principal Data, here and abroad, to which the doctrines of Probability may be applied (with a view to organize systems of Assurance), and from what sources can better be obtained? i, 368.
- On the Intensity of Diseases at different periods of Life. Extract from his Mortality of the Provident Classes in this Country and on the Continent, i, 82*.
- Reference to his Report on the Bengal Military Fund, C. Jellicoe, i, 167.
- Observations on his Sickness in Friendly Societies (Vital Statistics), J. A. Higham, i, 196; H. Tompkins, iii, 11, v, 9; T. R. Edmonds, v, 127; S. Brown, xi, 343.
- "Mortality of Master Mariners." *Review*, i, 241. Single and Annual Premiums calculated therefrom, E. H. Galsworthy, iv, 88.
- "On the Rate of Mortality among persons of Intemperate Habits." *Review*, ii, 96. Reference, R. T. Jopling, ii, 42.
- Indian Mortality Experience. Reference, S. Brown, ii, 204. Reports of Indian Funds. References, vi, 42, xi, 5, xii, 279, xvi, 189.
- Contributions to Vital Statistics. References, W. Spens, x, 81; C. Walford, xix, 191; J. Stott, xx, 41; G. F. Hardy, xxvii, 284.
- NEISON (F. G. P., Jr.).** On the Influence of Occupation on Health, as shown by the Mortality experienced, xvii, 95. Reference, H. Stüssi, xviii, 346.
- "Experience of the Ancient Order of Foresters." Reference, G. F. Hardy, xxvii, 288.
- Report of Rate of Accidents in Mines and Railways. Reference, J. Nicoll, xxxvi, 482, 514.
- NET POLICY VALUE** (Net Premium Method), A. H. Bailey, xxi, 115.
- As compared with Hypothetical Policy Value, H. C. Thiselton, xxviii, 487.
- NET PREMIUM.** On the relation between it and the Rate of Interest, W. Sutton, xvii, 446.
- NET PREMIUM METHOD OF VALUATION**, T. B. Sprague, xi, 90, xvi, 234n, xxi, 135; W. M. Makeham, xv, 449; E. Wright, xvi, 355; A. H. Bailey, xxi, 115; H. W. Manly, xxxvii, 78; G. King, xxxvii, 86.
- As affected by Expenses and Selection, J. Sorley, xxi, 192.
- As affected by recent Tendencies and Developments, S. G. Warner, xxxvii, 57.
- See also **Pure Premium Method and Valuation of Life Policies** (1).
- NEWBATT (B.).** Some reasons for thinking the system of Re-assurance undesirable, xii, 1.
- The Income Tax (an Address), xxviii, 280. Reference, T. B. Sprague, xxviii, 310.
- Presidential Address (November 1890), xxix, 1. References, W. K. Lemon, xxix, 381; D. Carment, xxx, 223; A. Hendriks, xxx, 270.
- Some of the Modern Developments of the Life Assurance System, xxxi, 1.
- NEW BUSINESS**, Method of dealing with, in the Valuation of a Life Office, R. Todhunter, xxxv, 17.
- Expenses of obtaining, T. E. Young, xxxvii, 49.
- See also **Business of Life Assurance**.
- "NEWCASTLE DAILY CHRONICLE",** Extract from:—
- Mortality in Coal Mines, viii, 345.
- NEWLING (S. W.).** On A. De Morgan's Formulas for determining the Rate of Interest yielded by an Annuity, xxxvii, 437.
- NEWMAN (A. K.).** An Enquiry into the Healthiness of New Zealand, xxiv, 211. Reference, A. F. Burridge, xxiv, 347.
- NEWMAN (P. L.).** Award of Second Prize (T. B. Sprague's), xxviii, 414.
- On the Twenty-three German Life Offices' Experience, xxix, 476.
- NEWMARCH (W.).** Suggestions as to the Federation of certain Cognate Societies, x, 348.
- "New Supplies of Gold." *Review*, iv, 78.
- On the Loans raised by Mr. Pitt during the first French War, 1793-1801, etc. *Review*, v, 256.
- NEWSHOLME (Dr. A.).** On Increase of Cancer, xxxvi, 113.
- Table showing registered Deaths from Cancer in Ireland and Brighton, for the periods 1887-89, 1897-99 and 1889-91, 1898-1900 respectively, xxxvi, 119.

NEWSHOLME (Dr. A.)—continued.

— The possible association of the Consumption of Alcohol with excessive Mortality from Cancer reprinted from the *British Medical Journal*, xxxviii, 347.

— **Review:**

— "The Declension of Phthisis" by Sir Hugh Beevor, xxxiv, 581.

NEWSHOLME (Dr. A.) and KING G. On the alleged Increase of Cancer. Paper read before the Royal Society, xxxvi, 120.

NEW SOUTH WALES. The *Times* on its population, i, 353.

— Rates of Mortality in, M. B. Pell, xxi, 257; A. F. BurrIDGE, xxiv, 341; E. M. Moors and W. R. Day, xxxvi, 151.

— Mortality from various classes of Diseases (1873), A. F. BurrIDGE, xxiii, 311.

— Population Tables 1870-1881, A. F. BurrIDGE, xxiv, 340.

NEW SOUTH WALES, Actuarial Society of. Some Notes on Valuation Methods, with Special Reference to J. Chatham's Paper xxxii, 393 on this subject. Being Presidential Address delivered to the, W. R. Dovey, xxxiv, 346.

"**NEW SUPPLIES OF GOLD**" (W. Newmarch). *Review*, iv, 78.

NEWTON'S, Table of Leases, A. De Morgan, ix, 185.

— Formula for Interpolation, F. Maurice, xiv, 1; L. Oppermann, xv, 145, 177.

"**NEW YORK STATE INSURANCE SUPERINTENDENT'S REPORTS.**" *Reviews*, xii, 110, xiv, 226.

NEW ZEALAND, Life Assurance Companies Act, 1873. Extracts, xx, 412.

— Friendly Societies in, F. W. Frankland, xxii, 449; Experience of, G. F. Hardy, xxvii, 262.

— Mortality from Various Classes of Diseases 1875, A. F. BurrIDGE, xxiii, 314.

— Healthiness of, A. K. Newman, xxiv, 211.

— Statistics Deduced from Census Returns and Registry of Deaths, F. W. Frankland, xxiv, 211.

NICHOLS W. S. On the Law of American Life, as Deduced from the Experience of the Mutual Benefit Life Insurance Company of New Jersey, Analysed and Adjusted by Gompertz's Law, xix, 28.

NICOLL J. The Relation of the Actuarial Profession to the State. J. Chisholm Prize Essay, 1898, xxxiv, 158, 200.

— The Actuarial Aspects of Recent Legislation, in the United Kingdom and other Countries, on the Subject of Compensation to Workmen for Accidents. Samuel Brown Prize Essay, 1900, xxxvi, 417. List of Books, Papers, etc., consulted, xxxvi, 545.

NIGHTINGALE Miss FLORENCE. On Her Notes on Nursing, H. W. Porter, ix, 242.

NIGHTINGALE H. E. Formulas and Tables of Values for Life Interests and Reversions, xxx, 9.

NON-EMPLOYMENT BENEFITS in Clerk's Associations, T. G. Ackland, xxxiii, 164.

NON-FORFEITABLE POLICIES, S. Younger, xiv, 476, xv, 451; J. R. Macfayden, xv, 297; J. B. Cherriman, xvi, 384; E. McClintock, xvii, 301.

NON-FORFEITURE. Proposed Law on the Subject, with Remarks by C. Jellicoe and E. Wright, viii, 245.

— Report of Insurance Commissioner, Massachusetts, ix, 273.

— Application of Principle to Ordinary Policies, T. B. Sprague, xxiv, 359; D. Carment, xxx, 222.

— System in the Colonies, A. W. Tarn, xxxiv, 539.

See also **Protection of Policies against Creditors.**

NON-FORFEITURE SCHEME, H. C. Threlton, xxxi, 47.

NORTHAMPTON MORTALITY TABLE, G. F. Hardy and H. J. Rothery, xxvii, 167.

— Criticized by F. G. P. Nelson, Sr., i, 369; C. Jellicoe, iii, 186.

— Remarks on its Adoption by the Equitable, and on the Objections to its Use, S. Brown, ii, 201.

— On the Choice of the Radix, J. Marshall, iv, 44.

— On the Injustice Caused by its Use, Dr. W. Farr, iv, 267.

NORTHAMPTON MORTALITY TABLE *continued.*

- Table of the Value of Force of Mortality, W. S. B. Woolhouse, xv, 125.
- On the Method used by Dr. Price in its Construction, W. Sutton, xviii, 107. *See also* Sir J. W. Lubbock, v, 206.

NORWAY. *See* Foreign Intelligence.**NORWEGIAN GENERAL WIDOWS' FUND**, Experience of, O. Schjoll, xxviii, 89.**NOTATION**, to be Used in Life Contingency Computations, S. Younger, xi, 53;
T. B. Sprague, xi, 91; W. Lazarus, xii, 48; S. Brown, xv, 167;
E. Sang, xv, 267.

- For Select and Damaged Lives, T. B. Sprague, xxii, 441.
- For Sickness Benefits, G. F. Hardy, xxvii, 280.
- For Marriage and Mortality Probabilities and Benefits, J. Chatham, xxviii, 391.
- For Exposed to Risk Formulae, W. J. H. Whittall, xxxi, 167.
- On the Necessity for a Universal, Report presented to the International Congress of Actuaries held at Brussels, September, 1895, A. Bégault. Translated from the French by G. King, xxxiii, 1.
- Systems of, suggested by Dormoy, Committee of Four French Companies, Institute of Actuaries, Dr. J. Karup, C. L. Landré, xxxiii, 14, 15.
- A system of, used in the construction of Tables of Rates of Mortality and Withdrawal, T. G. Ackland, xxxiii, 74, 162.
- In connection with Staff Pension Fund Problems, H. W. Mauly, xxxvii, 236, xxxviii, 103; G. King, xxxix, 180, 334; G. J. Lidstone, xxxix, 208, 334.

NOTES AND QUERIES — ACTUARIAL JOTTINGS — ACTUARIAL NOTES — PROBLEMS:(1.) *Arranged according to Authors' Names.*

- Adlard, H. T., xxxvi, 389.
- Adler, M. N., vii, 300, xii, 52, xiv, 242.
- Allen, J. M., xxxiii, 535.
- Anonymous, iv, 72.
- Baden, A., xvii, 447.
- Bailey, A. H., iv, 368, ix, 299.
- Biden, W. D., vii, 352.
- Carr, T., vii, 109, xiv, 415, xviii, 224, 247.
- Cherriman, J. B., xxi, 295, 298, 299.
- Chisholm, D., iii, 336, iv, 70.
- Christie, R., x, 235.
- Colenso, F. E., xxxii, 185.
- Coles, J., vii, 179.
- Curjel, H. W., xxxviii, 353.
- De Morgan, A., i, 335, ii, 390, xiv, 69.
- Editorial, xxxviii, 431, xl, 302.
- Edwards, H. H., xl, 289.
- Elderton, W. P., xl, 116.
- Farren, E. J., iii, 234, 323, 335, iv, 66, 141.
- Filipowski, H., iii, 338, iv, 243, 253.
- Fraser, A., xxxiv, 102.
- Galsworthy, E. H., v, 53.
- Godward, W., xvii, 266.
- Gompertz, B., iv, 245.
- Govan, J., xxxiv, 147.
- Gray, P., ii, 95, x, 117, 238, xi, 172, xiii, 60, xiv, 63, xvii, 224, xxi, 67.
- Hardy, G. F., xxv, 134, xxvii, 214, xxxii, 371.
- Hardy, P., ii, 91, iii, 330.
- Harvey, C. J., xxiv, 296.
- Higham, C. D., xxvi, 50.
- Hoskins, H., xix, 143.
- Hume, A. S. and Stett, W., xxxix, 370.
- Jellicoe, C., i, 332, iii, 326, iv, 134, v, 52, 155, 348, vi, 45, 104, 105, vii, 175.

NOTES AND QUERIES—ACTUARIAL JOTTINGS—ACTUARIAL NOTES—PROBLEMS:

(1.) *Arranged according to Authors' Names continued.*

- King, G., xxii, 293, 296, xxvii, 218.
 Laundry, S. L., viii, 58, 168, xi, 232.
 Levine, A., xxx, 538, 539.
 Lidstone, G. J., xxxi, 68, 304, xxxiii, 351, 412, xxxv, 480.
 Macfadyen, J. R., xv., 297, xix, 141, 142.
 McLauchlan, J. J., xviii, 290.
 Makeham, W. M., vi, 54, 357, ix, 361, xxviii, 393, xxix, 475.
 Marr, T., xiii, 246, xiv, 156.
 Meikle, J., iii, 325, iv, 134, v, 152, 154.
 Merrifield, C. W., iii, 324, vi, 298.
 Newling, S. W., xxxvii, 437.
 Oppermann, L., xiv, 156.
 Orchard, W., ii, 185, 393, iv, 61.
 Otter, W. C., vii, 239, viii, 113.
 Reynolds, W. J., iv, 65.
 Robertson, Dr. W., xix, 211.
 Rothery, H. J., xxviii, 483.
 Ryley, E., i, 332, iv, 367.
 Samot, D. J. A., xx, 344, 347.
 Scott, G., iv, 247, vi, 231.
 Searle, T. J., xxx, 557, 559.
 Shaw, C. G., ii, 295, v, 152.
 Smith, H. A., vi, 297, viii, 116, 167, ix, 295, xix, 143, xx, 145.
 Sorley, J., xx, 340, 342, 454.
 Spencer, J., xxxiii, 349, xxxviii, 280, xl, 293.
 Spens, W., iv, 139.
 Sprague, T. B., vii, 58, 174, viii, 59, 111, xiii, 381, xvi, 375, xviii, 69, xix, 212, xxv, 437.
 Stirling, J., xxxi, 259.
 Stott, W. and Hume, A. S., xxxix, 370.
 Sutton, W., xvii, 227, 446.
 Thomas, E. C., xxxviii, 276.
 Todhunter, R., xxxii, 378, xxxiii, 356.
 Tucker, R., iv, 250.
 Walker, D., xxv, 136.
 Wilding, R., xxii, 60, 61, 129, 131.
 Woolhouse, W. S. B., xi, 224, xxviii, 481.
 Wylie, W., ii, 391.
 Young, T. E., xxvi, 149.
 Younger, S., iv, 249, vii, 238.

(2.) *Arranged according to subject matter.*

- Annuity, Method of Approximating to the Rate of Interest in an, E. Ryley, i, 332; C. W. Merrifield, iii, 324; J. Meikle, iv, 134; J. J. McLauchlan, xvii, 290; S. W. Newling, xxxvii, 437; J. Spencer, xxxviii, 280.
 — Method of Obtaining the Value of a Life Annuity at One Rate of Interest from the Value of another Given Rate, J. Meikle, iii, 325.
 — Determination of the Rate of Interest in a Life Annuity, J. Meikle, v, 152.
 — At Simple Interest, Formula for an Approximate Value of, M. N. Adler, vii, 300.
 — (Certain), On the Component Parts of an, P. Gray, xi, 172. Reference, Author, 240.
 — — And Income Tax, A. Fraser, xxxiv, 102.
 — (Complete), Formula for Market Value of, A. Baden, xvii, 447; T. Carr, xviii, 224, 247; J. Sorley, xx, 454.
 — — Payable by Instalments, H. Hoskins, xix, 143.
 — — J. B. Cherriman, xxi, 299.
 — (Deferred), On the Calculation of, H. T. Adlard, xxxvi, 389.
 — (Increasing or Decreasing), Formulas for Value of, E. H. Galsworthy, v, 53; C. G. Shaw, v, 152.

NOTES AND QUERIES—ACTUARIAL JOTTINGS—ACTUARIAL NOTES—PROBLEMS:

(2.) *Arranged according to subject matter—continued.*

- Annuity (Joint Life), Approximate Value of, on Three Lives, P. Hardy, iii, 330.
 — — On the Generalisation of Simpson's Rule for, J. M. Allen, xxxiii, 535;
 A. Levine, xxxiii, 538.
 — (Reversionary), G. King, xxii, 296.
 — — By Annual Premiums, Returnable, P. Gray, xxi, 67.
 — — Value of Option of Second Nomination in, G. F. Hardy, xxv, 134.
 — (Survivorship), T. B. Sprague, xvi, 375.
 — — On the Last Survivor of Three Lives, Method of Finding Value of,
 W. Godward, xvii, 266.
 — — On the Last r Survivor of m Lives, General Expression for the Value
 of, G. King, xxii, 293.
 — (Temporary), Market Value of, J. R. Macfadyen, xix, 141.
 — Market Value of, R. Wilding, xxii, 61.
 — Tables at Different Rates of Interest, On a Method of Checking by help
 of one another, A. De Morgan, ii, 390.
 Ashanti Expedition, Mortality of the Officers Employed, T. B. Sprague,
 xix, 212.
 Booles' "Finite Differences", On an Error in Factorial Notation in, R.
 Wilding, xxii, 60.
 Commutation Formulæ, H. A. Smith, viii, 116.
 Commutation System, S. L. Laundry, viii, 168.
 Contingent Annuities and Assurances, On the Value of, with certain Limi-
 tations, W. C. Otter, vii, 239.
 Contingent Assurances: Assurance on one Life against Another, and for
 n Years after, R. Tucker, iv, 250.
 — On the Calculation of, F. E. Colenso, xxxii, 185.
 — On the Solution of a General Problem relating to, G. J. Lidstone, xxxv, 480.
 — On the Calculation of premiums for, when Makeham's Law holds,
 A. S. Hume and W. Stott, xxxix, 370.
 Conversion of Policies, S. L. Laundry, viii, 58. Reference, T. B. Sprague,
 viii, 112.
 Copyhold Leases, Formulas expressing the Value of all the Fines payable
 on renewal of, E. Ryley, iv, 367.
 Cotton-Spinning Problem, W. S. B. Woodhouse, xi, 224.
 Date of Death, Period intervening between the, and payment of sum assured.
 E. J. Farren, iii, 234.
 Deferred Assurances, With Deferred Premiums, Fines for, H. J. Rothery,
 xxviii, 483. Reference, H. E. Nightingale, xxx, 26.
 — With Returnable Premiums, J. Stirling, xxxi, 259. Reference (Editorial),
 xxxi, 260.
 Determinants, The Theory of, T. E. Young, xxvi, 149.
 De Morgan's Formulas for determining the Rate of Interest yielded by an
 Annuity, S. W. Newling, xxvii, 437.
 De Witt's Hypothesis as to the Rate of Mortality, W. Orchard, ii, 393.
 (d_x), Who first introduced the Symbol? J. B. Cherriman, xxi, 295. Remarks
 (Editorial), xxi, 296; J. A. Higham, xxi, 297.
 Endowment Assurance. Formulas for Single and Annual Premiums,
 C. Jellicoe, i, 332.
 — Formulas for Value of, D. J. A. Samot, xx, 344.
 — Interpolation of Values of Premiums for, D. J. A. Samot, xx, 347.
 — On Joint Lives, Value of, D. Walker, xxv, 136.
 — On Two Joint Lives, approximate Calculation of Net Premiums for,
 G. J. Lidstone, xxxiii, 354.
 — (Double) Reserve Value of, A. Fraser, xxxiv, 102.
 Equated Time of Payment, A. Levine, xxxiii, 539.
 Examination Questions (Second Year, 1864). Correction of Error in a
 Solution, M. N. Adler, xiv, 242.
 Expectation of Life, Formulæ for approximating to the, W. D. Biden, vii, 352.
 — Demonstration that a Life Annuity is less than an Annuity-Certain for
 the, T. B. Sprague, xiii, 381.

NOTES AND QUERIES—ACTUARIAL JOTTINGS—ACTUARIAL NOTES—PROBLEMS:

(2.) Arranged according to subject matter—continued.

- Exposed to Risk, New Formula for, G. King, xxvii, 218. Reference, J. Chatham, xxix, 92.
- Extra Risks. Railway Enginemen. Dr. W. Robertson, xix, 211.
- Pilots, T. B. Sprague, xix, 212.
- Gompertz's Law of Mortality, J. Govan, xxxiv, 147.
- Graduation. On a method of adjusting Tables of Mortality, W. M. Makeham, vi, 357.
- Makeham's Method. Reserve for Diseased and for Female Lives, subjected to an extra premium, J. Sorley, xx, 310, 342.
- Gompertz's Law, On Makeham's Extensions of, W. S. B. Woodhouse, xxviii, 481. Reference, G. H. Ryan, xxx, 6.
- Formulas, G. F. Hardy, xxxii, 371.
- On Formulas for, by Summation, R. Todhunter, xxxii, 378.
- Woodhouse's Formula, C. D. Higham, xxvi, 50, 478.
- Incomplete Years of Exposure, On the treatment of, in a Mortality Experience derived from records of assured lives, G. J. Lidstone, xxxi, 304.
- Instant of Death, On the value of an Assurance payable at the, S. Younger, vii, 238.
- Interest. Equivalence of Compound Interest with Simple Interest paid when due, A. De Morgan, i, 335.
- Proper expression for amount of £1 with the fractional part of a year's Interest, E. J. Farren, iii, 335; D. Chisholm, iii, 336; H. Filipowski, iii, 338, iv, 243, 253; W. Orchard, iv, 61; Anonymous, iv, 72, 253; B. Gompertz, iv, 245.
- Rate of, yielded by certain investments, On the means of approximating to the, W. M. Makeham, vi, 54.
- Tables (Smart's), R. Wilding, xxii, 129.
- Approximation to rate of, yielded by a Bond bought at a Premium, R. Todhunter, xxxiii, 356.
- Interpolation, Central-Difference Formulas, J. Spencer, xxxiii, 349.
- By Finite Differences (Two Independent Variables), H. H. Edwards, xl, 289.
- Two-Variable, some practical hints, J. Spencer, xl, 293.
- Joint Life Annuities, H. W. Curjel, xxxviii, 353.
- Karup's Formula for Valuing Policies in Groups according to Exact Duration, (Editorial), xxxviii, 431.
- Law of Uniform Seniority. Demonstrations of its extended application, by A. Levine and G. J. Lidstone, (Editorial), xl, 302.
- Logarithms. Form of the Number whose Logarithm is equal to itself, E. J. Farren, iii, 323.
- Formulas for using Tables of, C. W. Merrifield, vi, 298.
- Mortality in Mines, viii, 345.
- Rate of, in Tropical Africa, T. B. Sprague, xxv, 437.
- Negative Values, J. R. Macfadyen, xix, 112.
- Paid-up Policies, T. B. Sprague, vii, 58. Reference, J. R. Macfadyen, xv, 298.
- Considered as the equivalent of the ratio the premiums paid bear to the total number payable, J. R. Macfadyen, xv, 297.
- Formula for $\left(1 - \frac{P_x}{P_{x+n}}\right)$, J. B. Cherriman, xxi, 298.
- Policies, Insurable Interest in, upon the Life of another, A. H. Bailey, iv, 368.
- Conversion of, by application of Bonus, T. Marr, xiii, 246.
- Form of Life Policy granted by private Underwriters in 1754, v, 349.
- Policy Values, In Terms of Premiums, R. Wilding, xxii, 131.
- New Formulas for Calculating, T. J. Searle, xxx, 557.
- Their Transformation from 11^M to 11^{M-5} Mortality, T. J. Searle, xxx, 559.
- Premiums, Annual, for Whole-Life Assurance, On a new expression for the value of, P. Gray, ii, 95.
- An Average Premium, C. J. Harvey, xxiv, 296. Remarks (Editorial), xxiv, 300.
- Method of obtaining from a Table of assumed Whole-Life Premiums the corresponding Table of Mortality, W. Wylie, ii, 391.
- Approximate Method of Finding, for an Assurance on One Life against Another, and for n Years longer. Remarks (Editorial), iv, 134.

NOTES AND QUERIES—ACTUARIAL JOTTINGS—ACTUARIAL NOTES—PROBLEMS:

(2.) *Arranged according to subject matter—continued.*

- Premiums, Conversion of, on an Existing Assurance from Whole of Life to Limited Payment Scale, J. Meikle, v, 151.
- On the Method of deriving from a Table of, the Rate of Mortality on which it is based, G. Scott, vi, 231. Reference, H. A. Smith, vi, 297.
- On the Equation of Arbitrary Rates of Life Premium, H. A. Smith, vi, 297.
- Annual, incongruous with Benefits, H. A. Smith, viii, 167. Reference, R. Tucker, ix, 245.
- Demonstration of the expressions for the Value of single and annual, P. Gray, x, 238. Reference, Dr. A. Wiegand, x, 286.
- Method of obtaining half-yearly and quarterly from the annual, S. L. Laundy, xi, 232.
- Demonstration of Formulas for Whole-Life, Temporary, Deferred and Endowment Assurances, M. N. Adler, xii, 52.
- Required for Life Assurance when Interest is allowed upon them, P. Gray, xiv, 63.
- Relation between Net Premium and Rate of Interest, W. Sutton, xvii, 446.
- Loading of, H. A. Smith, xx, 145.
- Present Value of a Series of Payments—Certain when the Reproductive Rate of Interest differs from the Remunerative Rate, G. J. Lidstone, xxxiii, 412.
- Probabilities, Result to be Expected when a dynamically true Coin is tossed many times in succession. Remarks (Editorial), iii, 326; W. J. Reynolds, iv, 65.
- Of throwing any Specified Number with two, three, four or more Dice, G. Scott, iv, 247.
- A Question in (Average Magnitude of Deviations from Mean Result), G. F. Hardy, xxvii, 214. References, W. M. Makeham, xxviii, 323, 327, 332.
- Problems, Petersburg Problem, W. Orchard, ii, 185.
- Annuity—Certain—Problem as to Increasing Annuities—Certain, A. De Morgan, iv, 243. Solution, iv, 277.
- A_x . Demonstration of formula, $\left[\frac{1 - ia_x}{1 + i} \right]$, C. Jellicoe, v, 52.
- Value of Annuity to y after Death of x , if within n Years; but to be entered on in n Years if either is then Alive, and to continue to the Death of the Survivor, P. Gray, xiii, 60.
- Value of a Policy, A. De Morgan, xiv, 69. Solution, T. Marr, xiv, 156.
- Partial Commutation of Premium in the case of "Rated-up" lives, P. Gray, xvii, 224.
- Present Value of the Amount to which an Annuity will accumulate by the End of the Year of Death, R. P. Hardy, xxiii, 244.
- If $\left[\frac{1 + a_x}{1 + a_{x+1}} > \frac{1 + a'_x}{1 + a'_{x+1}} > 1 \right]$, then will
$$\frac{a_x}{v(1 + a_x)} > \left(\frac{1}{1 + a'_x} - \frac{1}{1 + a_x} \right) \frac{1}{v - v'}.$$
- J. C. Hopkinson, xxv, 277.
- The *a posteriori* Probabilities of certain Hypotheses as to the Drawing of Balls from an Urn, W. M. Makeham, xxix, 475.
- Public Debt due to the Bank, x, 236.
- Reversion, To £1 payable at Death of A (aged x), provided he dies before B (aged y), or within n Years after him; Demonstration of Formula for the Value of, T. B. Sprague, vii, 174.
- Payable at the Instant of Death, On the Value of, D. Chisholm, iv, 70.
- (Contingent), On the Value of, subject to certain Limitations, P. Hardy, ii, 91.
- On the Calculation of when four lives are involved, T. B. Sprague, xviii, 69.
- (Isolated). On the value of, C. G. Shaw, ii, 295.
- Reversionary Annuities payable half-yearly or quarterly, T. Carr, vii, 109.
- Select Lives, Chances of premature death among, E. J. Farren, iv, 66, 141.
- On the inadequacy of existing Data for determining the Rate of Mortality among, W. Spens, iv, 139.

NOTES AND QUERIES—ACTUARIAL JOTTINGS—ACTUARIAL NOTES—PROBLEMS:

[2.] *Arranged according to subject matter—continued.*

Scottish Life Offices, Statement of Income, Funds, and total sum assured, R. Christie, x, 235.

Significance of the expression $\frac{1}{1+a_x} - (1-v)$, P. Gray, x, 117.

Staff Pension Funds. On the construction of columns for obtaining the value of the return, on death or withdrawal, of the total contributions (based on salary) with compound interest at rate j per annum discounted at rate i per annum, E. C. Thomas, xxxviii, 276.

Statistics of Human Life, x, 237.

Summation (Approximate), On an Alternative type of Formula for, W. P. Elderton, xl, 116.

Surplus, On the determination of, S. Younger, iv, 249.

Survivorship Assurance, On the Approximate expression for, A. H. Bailey, ix, 299.

— On the Calculation of Premiums for, by Gompertz's hypothesis, W. M. Makeham, ix, 361.

Term Assurance, On Joint Lives, T. B. Sprague, viii, 59; W. C. Otter, viii, 113.

— Life against life, Expression for the value of, H. A. Smith, ix, 295.

— D and X formula for, H. A. Smith, xix, 143.

Theory of Errors, Demonstration of a Formula, W. M. Makeham, xxviii, 393.

Value of a Policy on the longest of two Lives, T. Carr, xiv, 415.

— And rate of interest, on the relation between, W. Sutton, xvii, 227.

Whole Term Assurances on Single Lives, Method of Valuing by Classification, J. Coles, vii, 179.

“NOTES ON FINITE DIFFERENCES” (*Notice of Publication*), A. W. Sunderland, xxv, 368.

“NOTES ON THE THEORY OF LOGARITHMS” (*Notice of Publication*), W. R. Macdonald, xxv, 368.

NOTICE OF ASSIGNMENT, T. B. Sprague, xxxiii, 382. *See also* Assignment of Life Policies.

NOTICES OF ACCIDENTS ACT, 1894. Reference, J. Nicoll, xxxvi, 526.

NOTICES OF NEW BOOKS. *See* Reviews—Notices of Publication.

NUMERICAL SOLUTION, W. S. B. Woolhouse, xv, 313. A. De Morgan, xv, 327.

OAKES (Lt.-Col. W. H.). On a method of Multiplication which may be practised mentally, x, 326.

— On a particular arrangement of Elementary Values, xii, 57.

— Table of Reciprocals. *Review*, xii, 362.

OBITUARY NOTICES:—

H. Adan, xxxvi, 399; H. J. Brooke, vii, 286; G. Cutcliffe, xxxv, 490; G. Davies, v, 337; A. Day, xxxix, 126; D. Deuchar, xxxix, 126; A. J. Finlaison, C.B., xxxv, 490; J. Finlaison, ix, 116, x, 147; C. Gill, vi, 216; B. Gompertz, xiii, 1; P. Gray, xxvi, 391; Maj.-Gen. J. C. Hannington, xxv, 367; W. B. Hodge, xxv, 367; S. Homans, xxxiv, 144; C. Jellicoe, xxiv, 17; W. M. Makeham, xxx, 1; J. Marshall, vi, 113; W. Orchard, iv, 252; H. W. Porter, xxxv, 490; Prof. J. J. Sylvester, xxxiii, 345; C. Walford, xxv, 367; J. Hill Williams, xxvi, 218; W. S. B. Woolhouse, xxxi, 362; Elizur Wright, xxv, 367.

OCCUPATION. Comparative mortality among English males, Publicans, Miners, Clerks, Printers, Potters, M.C. Experience, M. N. Adler, xii, 273.

— Its influence upon Health, H. W. Porter, ix, 12, 89, 149; S. Brown, xi, 346.

— Its influence upon the Public Health, as shown by the mortality experienced, F. G. P. Neison, Jr., xvii, 95.

— Fatal Accidents in various Occupations, W. J. H. Whittall, xxiii, 188.

— Effect of, on rates of Mortality and Sickness in Friendly Societies, A. W. Watson, xxxv, 275–284. Reference, F. Schooling, xxxv, 325.

ODDFELLOWS (Manchester Unity), Sickness and Mortality Experience, 1893–97. On the graduation of the Experience, J. Spencer, xxxviii, 334.

— *Review* (Editorial), xxxviii, 369.

See also A. W. Watson, xxxv, 268.

OEDER, Historical notice of him, F. Hendriks, i, 49.

"**OFFICIAL PUBLICATIONS** of the Mortality of Assured Lives" (*Notice of Publication*), J. Meikle, xxv, 368.

OLD AGE, German Law relating to Invalidity in, T. E. Young, xxix, 269.

OLD AGE PENSIONS. See *Pensions*.

ONTARIO, Infantile Mortality in, M. D. Grant, xl, 132.

OPIUM, The consumption of, as affecting Life Assurance Risks, A. W. Tarn, xxxiv, 527.

OPPERMANN (L.). Notes on Newton's Formule for Interpolation, xv, 145, 177.

— On Briggs's Formula for Interpolation, xv, 312.

— Formula for the force of Mortality at young ages $\mu_x = ax^{-\frac{1}{2}} + b + cx^{\frac{1}{2}}$, Dr. T. N. Thiele, xvi, 315.

OPTION, Of second Nomination in Reversionary Annuities, G. F. Hardy, xxv, 134.

Of Withdrawal in Deferred Annuity Contracts, W. B. Paterson, xxvi, 465.

— Of Redemption, Sale of Reversions with, T. B. Sprague, xxvii, 113; D. A. Bumsted, xxvii, 118.

— Premium for future assurance without medical examination, G. F. Hardy, xxxvii, 185.

See also *Deferred Assurances*.

OPTIONS. Value of, J. W. Stephenson, xii, 302; W. M. Makeham, xii, 362; S. Younger, xiii, 55, 118; H. A. Smith, xiii, 103; P. Gray, xiii, 104.

ORCHARD (W.). On a General Method of obtaining the Finite Integral of any Rational Algebraic Function of x ; or summing any series of which such a Function is the general term, i, 9*.

— On the Value of Annuities-Certain, of which the successive payments are the Figurate Numbers, i, 100*.

— On the Petersburg Problem, ii, 185.

— On De Witt's Hypothesis as to the Rate of Mortality, ii, 393.

— On the proper expression for the amount of £1, with the fractional part of a year's interest, iv, 61. Reference, T. B. Sprague, xiii, 192.

— Tables of Single and Annual Premiums, *Review*, i, 363.

— On his Tables of Single and Annual Premiums and on a theoretical Mortality Table proposed by him, P. Gray, vi, 181.

— Remarks on the occasion of his death, R. Tucker, iv, 252.

See also *Gray, Smith and Orchard*.

ORIGINAL TABLES.

The entries under this head are arranged in two divisions:—

- (1.) Containing an alphabetical list of the names of the authors (or contributors), with such description of their tables as appears necessary for convenience of reference, and the volume and page. The entries under each author's name are given in order of volume and page.
- (2.) Containing an alphabetical list of the various subjects to which the tables relate, with the author's name, and the volume and page.

(1.) *Arranged according to Authors' Names.*

Ackland, T. G., xxiii, 352. Graduation of HM Table by columnar applications of Woolhouse's method.

— xxxiii, 68. (1) An Investigation of some of the methods for deducing the Rates of Mortality, and of Withdrawal, in years of duration; with (2) the application of such methods to the computation of the Rates experienced, and the special Benefits granted by Clerks' Associations. Illustrative tables of methods of deducing the Exposed to Risk, Rates of Mortality, and of Withdrawal in five years of duration; also with assumed distribution of Entrants and Withdrawals. Comparative statement of the successive operations required for their computation, by Exact, Mean, and Nearest Duration methods. Comparison of results of different methods of estimating Ages at Entry. Rates of Mortality, Withdrawal and Non-employment. Values of Assurances at death, of allowance during non-employment, of Annuities, and of Net Premiums. Interest 3 per-cent. Reserves for Benefits with and without allowance for withdrawals, on Net Premiums computed with and without allowance for withdrawals. Commutation columns allowing for mortality and withdrawal.

ORIGINAL TABLES. (1.) Arranged according to Authors' Names.

Ackland, T. G. —continued.

— xxxvii, 142. British Offices' Life Tables, 1893. An Investigation of the Rates of Mortality in different classes of the Assurance Experience, and of the resulting net Premiums and Policy Reserves.

— xl, 60. Valuation by means of Select Tables. True and approximate values of $\bar{Q}_{[x]+t} = (\bar{a}_{[x]+t} - \bar{a}_{x+t})$; also, at every fifth age, values of the first differences of these quantities, and of the ratio of increase of such differences. $OM 2\frac{1}{2}$ and 3 per-cent interest.

— and Bacon, J., xxxviii, 570-606. The valuation of Whole-Life Industrial Assurances, with allowance for lapses. "Extended" Rates of Lapse, reckoned (a) from entry, (b) from end of calendar year of entry. Valuation factors with allowance for lapse, 3 per-cent full and half lapse rates. "Extended" valuation data, unadjusted and adjusted. Detailed valuation results, 3 per-cent full and half lapse rates, and with exclusion of lapse rates, central ages at entry and all entry ages combined; also at 4 per-cent with exclusion of lapse rate. Net yearly premiums at 3 per-cent on different assumptions as to rates of lapse and surrender allowance, and at 4 per-cent, excluding lapses. Distribution of expenditure on different assumptions. Net liability for £100 assured at 3 per-cent and 4 per-cent on different assumptions as to rate of lapse, and net or reduced premium valued.

— and Smeed, A. H. See Smeed, A. H. and Ackland, T. G.

Adler, M. N., xii, 273. Comparative Mortality of Persons engaged in different occupations. Farr's and Ratchliffe's Observations. Comparative Mortality according to locality.

Allin, S. J. H. W., xxxix, 342. Tables deduced from the particulars supplied for valuation by the Presbyterian Church of England Ministers' Widows' and Orphans' Fund, in 1881 and 1902.

Andras, H. W., xxxii, 360-4. Quinquennial Reversionary Bonuses assuming Hypothetical scales of Premiums, "Select" 4 per-cent office premiums, and various realized rates of interest; also assuming various scales of premiums. Valuation HM 3 per-cent. HM and Sprague's "Select" Mortality. Tables showing the effect of various scales of premiums, realized rates of interest and expenditure on Reversionary Bonuses from annual surplus margins and excess interest beyond the valuation rate (3 per-cent) HM Mortality; also the difference between such Reversionary Bonuses and a bonus of £1. 10s. per-cent per annum.

Bacon, J. and Ackland, T. G. See Ackland, T. G. and Bacon, J.

Bailey, A. H. and Day, A., ix, 319. Peerage Families. q_x , p_x , \hat{e}_x , for males, females, and persons.

Beeton, Miss M. and Pearson, Karl, xxxv, 127-9. Correlation Table for the inheritance of Longevity. From father to son; in brethren.

— Yule, G. U. and Pearson, Karl, xxxv, 472-5. Correlation between duration of life and the number of offspring. Mothers and offspring; fathers and offspring.

Beevor, Sir Hugh, xxxiv, 585-6. Fall in the death-rate from Phthisis in 1891-5 as compared with 1861-70.

Bell, F., xxxix, 64. On the Retrospective method of Valuation. Whole-Life Assurance by Limited Payments. Endowment Assurances. Tables of correction numerators ${}_tK_x$ and $K_{x:\overline{t}|}$ and Reciprocals OM and OM Mortality and interest at $2\frac{1}{2}$, $2\frac{3}{4}$, 3, $3\frac{1}{2}$, and 4 per-cent.

Berridge, G. W., xii, 225. Peerage Males. p_x , l_x , d_x , e_x ; D_x , N_x , a_x , and σ_x , at 3 per-cent.

Besant, A. D., xxxi, 367. Values of Endowment Assurance Policies payable at ages 50, 55, 60, and 65. HM Mortality and $2\frac{1}{2}$ per-cent interest.

Biden, W. D., x, 263. Value of a Life Annuity to allow the purchaser a net interest of 5 per-cent, $\frac{1}{\sigma + .047619} - 1$; value of the annuity when secured by the policy, $\frac{.952381}{\sigma + .047619}$; annuity covered by every £1 assured, $\sigma + .047619$; for premiums per-cent, £1, £1. 0s. 3d., £1. 0s. 6d., £1. 0s. 9d., . . . £2; £2s. 0s. 6d., £2. 1s., . . . £6; £6. 1s., £6. 2s., . . . £9. 14s.; £9. 16s., £9. 18s., £10.

ORIGINAL TABLES. (1.) *Arranged according to Authors' Names—continued.*

- Bowser, W. A.**, xvi, 149. Institute HMF⁶⁹ Table adjusted. l_x , d_x , e_x , and q_x .
 — xvii, 34. Mortality of Children of Dissenting Ministers, l_x , d_x , q_x , p_x , $\log p_x$, $\log l_x$; also single and annual premiums for endowments payable at 14 and 21, at 3, 3½, and 4 per-cent.
 — xvii, 335. Hodgson's Clergy Mortality Experience adjusted, l_x , d_x , q_x , a_x , and Λ_x , at 3 and 5 per-cent; ϖ_x , at 3 per-cent.
- Braid, W.**, v, 363. Carlisle 3 per-cent Joint Assurances. $100\Lambda_{xy}$ and $100\varpi_{xy}$, for $x=15 \dots 60$, and $y=15 \dots 60$.
 — vi, 115. Carlisle 3 per-cent (Three Lives). $D_{x,x+1,x+2}$, $D_{x,x+1,x+3}$, $D_{x,x+2,x+4}$, $D_{x,x+2,x+5}$, $D_{x,x+2,x+6}$, $N_{x,x+1,x+2}$, $N_{x,x+1,x+3}$, $N_{x,x+2,x+4}$, $N_{x,x+2,x+5}$, $N_{x,x+2,x+6}$, $a_{x,x+1,x+2}$, $a_{x,x+1,x+3}$, $a_{x,x+2,x+4}$, $a_{x,x+2,x+5}$, $a_{x,x+2,x+6}$, $a_{x,x+2,\overline{x+4}}$, $a_{x,x+2,\overline{x+6}}$.
- Brown, S.**, iii, 17. Tables illustrating the influence of the ages of parents on the sex of children.
 — iii, 29. Mortality Table from Experience of the Prussian Widows' Annuity Society, 1776-1845 (Brune). Numbers living, withdrawn, and died; l_x , d_x , q_x , and e_x , males and females; Table of Comparison of e_x with Finlaison's Government Annuitants and Equitable Experiences.
 — v, 214. Tables of Sickness and Mortality experienced in Friendly Societies in France.
 — vii, 195. Tables showing quinquennial age distribution in 100,000 marriages of the husbands and wives in (a) Massachusetts, 1844-51; (b) England, 1846-8 and 1851-3, the latter divided into (i) bachelors with spinsters, (ii) bachelors with widows, (iii) widowers with spinsters, and (iv) widowers with widows.
 — viii, 184. Numbers Living, Actual Deaths in Mutual Benefit Life Insurance Company, New York, compared with Expected Deaths by Carlisle and London Companies' Tables. Exposed to Risk, Actual Deaths, Mutual Life Insurance Company of New York, for 15 years compared with Expected Deaths by Carlisle Table. Also Adjusted Table, l_x , d_x , and q_x .
 — xi, 25. Madras Military Fund. Mortality and Marriage Experience, 1808-1857.
 — xii, 276. Mortality and Marriage Experience of Europeans in India.
 — xvi, 206. Indian military officers and civil servants during service and after retirement, and their wives, widows and children. Forces of mortality and marriage, $\log q_x$, q_x , p_x , $\log p_x$, $\log l_x$, l_x , d_x .
 — xvi, 429. Institute HMF Table, adjusted by Makeham's formula. l_x , d_x , q_x ; D_x , N_x , M_x , a_x , a_{xx} , at 3 and 4 per-cent.
- Buchanan, J.**, xxxvii, 391. Tables showing by different methods of approximation: (a) Total error in the sum of the values of assurances of 1 payable in the event of a young life dying first, second, and third of self and two older lives; (b) Comparative values of Joint Life Annuities (3 lives); and (c) Single premium for Survivorship Assurances (3 lives). Carlisle 3 per-cent.
 — xxxix, 261-298. Model Office Valuations, Bonuses, Surplus Loading, Surplus Interest on Policy and Bonus Reserves, Expected Claims, Expected and actual Death Strain, net Premiums, values of sums assured and net premiums, and Bonus Reserves, according to different Tables of Mortality and Rates of Interest
- Burn, J. and Macdonald, J.**, xxxviii, 453. An Investigation into the Rates of Re-Marriage and Mortality amongst widows in receipt of relief from the Patriotic (Russian War) Fund, 1854-1900.
- Burridge, A. F.**, xxiii, 309. Births, Deaths, and Census Returns in Victoria. Annual Death Rate, 1871 to 1879, for seven Australasian colonies. Nosological Tables. Migration returns. Mortality Table, l_x , d_x , p_x .
 — xxiii, 324. Application of graphical method of construction to English Life Table, No. 1, l_x , d_x , p_x .

ORIGINAL TABLES. (1.) Arranged according to Authors' Names.

Burridge, A. F. - continued.

- xxiv, 333. Births, deaths, and census returns in Victoria, New South Wales, Queensland, and South Australia, 1870 to 1880. Comparison of average annual death rate in Victoria, New South Wales, Queensland, and New Zealand. Comparison of infantile mortality by various tables. Comparison of l_x and p_x , with Humphrey's English Table, HM and HF, and American 30 Offices' Tables. Mortality Tables, &c., for Victoria.
- xxv, 83. British Census Returns from 1801 to 1881. Statistics relating to population, emigration, and immigration. Age distribution of population, male and female, 1811, 1851, . . . 1881. Age at marriage, males and females, and marriage rate, 1851, 1861, . . . 1881. Population of London and percentage to population of England and Wales, 1801, 1811, 1821, . . . 1881. Proportion of population blind, deaf, and insane, 1851, 1861, 1871, 1881. Statistics of occupations of population, male and female, 1881.
- xxix, 459. Fluctuations in the Rate of Mortality in England and Wales. Tables of the annual birth and death rates, 1838-1889, with an analysis for the period 1860-1880, of the deaths into their various causes. Comparison with the results of a similar analysis for Victoria. Comparison for England and Wales of the death rates in the periods 1876-80, 1881-5.
- xxxvii, 274. Influence of Vaccination in the Small-pox epidemic at Sheffield in 1887-88.
- xxxvii, 281. Attacks and deaths from Small-pox in the Prussian, French, and Austrian armies.

Calderon, H. P., xxxv, 176-190. Model Tables on Makeham's hypothesis with which to compare the deduced functions of an ungraduated table. Makeham's formula applied to the graduation of the Institute HF Table.

Campbell, R., ix, 223, 232. Table of $\log \frac{b+x}{b}$ or $\frac{b}{b-x}$, for all values of b from 1 to 20, and x from 1 to 20. Also probability that deviations from an average will exceed a named percentage.

Carment, D., xxi, 74. Comparison of Reserves of the Australian Mutual Provident Society (whole-life policies only), with reserves estimated by means of model offices.

— xxii, 372. Values of endowment assurance policies payable at ages 50, 55, 60, 65, or at previous death, HM 3 per-cent Table. xxiii, 224, HM $3\frac{1}{2}$ per-cent Table.

— xxiv, 224. Graduation of HM Table by Woolhouse's method of showing his final adjustments.

— xxxi, 78. Table of Policy-values. HM 4 per-cent. Policies subject to contingent debts.

Carment, D. M., xxxi, 386. Issue Policies in force 1886-90, sums assured, premiums received, and average premiums.

Chandler, S. C., Jr., xvii, 58. Distribution by age of assured lives in the Continental Life Insurance Company of New York compared with the Twenty Offices' Experience.

Chatham, J., xxv, 439. Contingent Premiums, $\pi^1_{x:y(t)} - \pi^1_{xy}$,

$$\Lambda^1_{x:\overline{y(t)}} - \pi^1_{xy}, \pi^1_{xy}, \Lambda^1_{xy}; \text{HM 4 per-cent.}$$

— xxvii, 37. On the Relative Ages of Husbands and Wives whose Marriages are fruitful. Tables showing the numbers of marriages for any age of husband or wife, and of *fruitful* marriages for each age of husband, deduced from Ansell's "Statistics of Families in the Upper and Professional Classes." Graduated tables constructed from the same data, of the "normal" age of the wife for selected ages of husband. Final graduated table (from those marriages only in which the wife's age was between 16 and 40) of marriages for each *difference* of age of husband and wife, selected ages of husband.

ORIGINAL TABLES. (1.) *Arranged according to Authors' Names.***Chatham, J.**—*continued.*

— xxix, 81. On the Rates of Mortality and Discontinuance among recently Selected Lives. A comparison of the rates of the "Economic" and "Connecticut Mutual" as deduced for lives, policies and amounts. Summaries for the first ten insurance years of the Scottish Amicable, Gotha, Equitable, Institute, New York Mutual, and Thirty American Offices' Experiences, for quinquennial ages. Table showing the rates of mortality in different countries. Adjusted mortality rates for each of the first ten insurance years, Gotha Experience. Unadjusted mortality and discontinuance rates in Equitable, Institute, and New York Mutual Experiences, quinquennial ages, first ten years of insurance. Ditto, for ten Scottish Offices, with a comparison of the actual and expected deaths.

— xxxvii, 531-540. Graduation of the British Offices Annuity Experience (1863-1893) by the Graphic Method. Extended Tables of $l_{[x]+t}$, $d_{[x]+t}$, $l_{[x]+t}$, $q_{[x]+t}$, and $c_{[x]+t}$, $t=0, 1, 2 \dots 9, 10$ and upwards. Males and Females.

— and Hewat, A. See Hewat, A. and Chatham, J.

Chisholm, D., ii, 318. Probabilities of Survivorship between Two Lives, Carlisle 3 per-cent. $\log l_{x+\frac{1}{2}}$ and $\log D_{x+\frac{1}{2}}$ ($=\log l_{x+\frac{1}{2}}t^{x+1}$), $\log l_{xy}$, $\log D_{xy}$, $\log d_{xly+\frac{1}{2}}$, $d_{xly+\frac{1}{2}}$, $\Sigma d_{xly+\frac{1}{2}}$, $\log \Sigma d_{xly+\frac{1}{2}}$, $\log Q_{xy}^1$, Q_{xy}^1 , $\log C_{xy}^1$, C_{xy}^1 , M_{xy}^1 , R_{xy}^1 , $\log M_{xy}^1$, $\log A_{xy}^1$, A_{xy}^1 , D_{xy} , N_{xy} .

— iv, 89. Assurances payable at the Instant of Death. Carlisle 3 per-cent. \bar{C}_x , M_x , A_x , and \bar{N}_x , according to the formulas—

$$(1) \bar{A}_x = (1 - ia_x) \div (1 + \frac{1}{2}i).$$

$$(2) \bar{A}_x = (1 - ia_x) \div \sqrt{1 + i}.$$

Chisholm, J., xxv, 411. Analysis of Medical Report Forms used by British Life Offices.

— xxvi, 55. On Logarithms correct to Ten Places of Decimals. Table for computing to 8 places the logarithm of any number by means of the eight-figure logarithms of the numbers from 100,000 to 108,000.

— xxxii, 182. Deductions from sum assured corresponding to fixed extras.

— xxxiii, 344. Schedule of the principal requirements of the various States of the American Union as regards Life Assurance Companies.

Colenso, F. E., xxxi, 354. Tables for the calculation of Survivorship Benefits.

Functions tabulated: μ_x ; $\Delta\mu_x$; $\frac{1}{\Delta\mu_x} \div 10^3$; Carlisle \bar{a}_{xxx} ; $-\Delta\bar{a}_{xxx}$; \bar{a}'_{xxx} ; $-\Delta\bar{a}'_{xxx}$; $(-\lambda\bar{S}\bar{a}_{xxx})$; $\log_{10}(\mu_x + \lambda s)$; $\log_{10}\bar{a}'_{xxx}$; Carlisle 3 per-cent. (Accented annuity-values at special rates of interest.)

— xxxii, 187-193. Tables for computing the values of Joint Life and Survivorship Benefits at 3 per-cent interest upon the basis of the Carlisle Mortality, in cases where not more than four lives are involved.

Cooke, T. H., xix, 224. Indian Uncovenanted Service Fund (Mr. Finlaison's data). a_x , A_x , ϖ_x , D_x , and N_x at 3 and 4 per-cent.

Crisford, G. S., xxi, 301. On surrender-values and paid up policies. Analysis of average office premiums for each fifth age, showing margin for profit on HM 3 per-cent basis. Surrender-values of ordinary whole life assurances, quinquennial ages at entry and various durations, by various methods. Deductions from surrender-values to compensate for loss of contribution to general expenses. Tables of paid-up policies by methods based on premiums paid, on reserves, on surrender-values, and by a method proposed by the author. Comparison of paid-up policies and surrender-values of whole-life limited payment policies, with and without non-forfeiture clause, by various methods, theoretical and actual. Comparison of surrender-values of policies with prices realized at public auction. List of Life Offices in 1879, with some account of their practice as regards surrender-values and paid-up policies, and illustrative tables of the surrender-values quoted by these offices in 1879.

— xxv, 184. Analysis of premiums charged by 56 Life Offices in 1885, showing margin for profit on HM 3 and 4 per-cent net premiums, after allowing for expenses. Ages 20, 25, 30, . . . 60.

ORIGINAL TABLES. (1.) Arranged according to Authors' Names.

Crisford, G. S. *continued.*

— xxv, 387. On Office Premium Loadings, and how they are dealt with in Valuations and Bonus Distributions. Analysis of specimen office premiums charged in 1885, showing profit margin on various bases. Comparison of such margin with bonuses by methods of distribution actually employed.

Davies, G., xv, 111. Survivorship Annuities, &c., to pay 5 per-cent beside the premium charged for assurances by the Northampton 3 per-cent Table.

Davis, W., x, 60. Dr. Farr's Healthy English Table. D_x , N_x , S_x , at 3 per-cent.

Day, A., viii, 133. Premiums for insurances against issue. Probability of marrying in a year, bachelors and widows of the general population (1851). Present value of £1, payable at the end of the year in which a husband shall contract a second marriage, English 3 per-cent Table.

— x, 186-195. Peerage Families. Annual Marriage Rate, Bachelors and Widowers. Present value of £1, at the end of the year in which a husband shall contract a second marriage.

— xii, 191. Peerage Families. Re-marriage Statistics.

— and Bailey, A. H. See Bailey, A. H. and Day, A.

Day, W. R. and Moors, E. M. See Moors, E. M. and Day, W. R.

Deuchar, D., xxviii, 442. Progress of Life Assurance Business in the United Kingdom during the last 50 years. Table showing the rates of interest earned by Life Offices.

Diver, O. F., xl, 15, 40. Valuations by means of Select Tables. Specimen values of $\phi_{[x]+t} = (a_{[x]+t} - a_{x+t})$. $0(M)$ $2\frac{1}{2}$, 3, and $3\frac{1}{2}$ per-cent; also $0(am)$, $0(a'l)$, and $0(NM)$ at $2\frac{1}{2}$ per-cent interest.

Dovey, W. R., xxiii, 285. Influence of selection on the mortality from different classes of diseases amongst assured lives. Mortality experience of 10 Scottish Offices (Meikle) compared, in 8 classes of diseases, with mortality of population of Scotland. Years of assurance, 0 to 9, given separately.

Downes, J. J., vii, 79. Economic Life Experience, Table of e_x , based on (a) Lives, (b) Policies; compared with e_x , Seventeen Offices' Table. Table of actual deaths compared with expected by Seventeen Offices' and Northampton Tables.

Dunn, S. G. and May, B., xxxviii, 51. Tables of the values of continuous Temporary Annuities for the valuation of endowment assurances in groups. $0(M)$ Mortality, $2\frac{1}{2}$ and 3 per-cent interest.

Edmonds, T. R., ii, 67. Population Tables, 1801-1851 and rates of increase for England and Wales. Births, Deaths, and Marriages, 1700-1850, of Females, and mortality rates for Females, 1813-1830 and 1838-1844, compared with Carlisle Table and table of village mortality.

— v, 143. Comparative tables of rates of mortality and sickness among Friendly Societies (Finlaison, Neison, and Ratcliffe), and five theoretical tables, one of which represents the annual mortality of the total Male population of England.

Edwards, H. H., xl, 291-2. Coefficients, and Logarithms of Coefficients for Interpolation in a table of two independent variables.

Elderton, W. P., xxxvii, 509. Temporary Assurances. Exposed to Risk and Deaths, graduated by means of frequency-curves; also premiums and annuities at 3 per-cent interest. British Offices' Experience, 1893.

Emminghaus, Dr. A., xxiv, 55. German Life Insurance Companies, insurances in force and discontinuances 1869-81, new business, 1874-81, and following particulars for each office at the end of 1881, namely, actual and expected claims, lives and amounts assured at beginning and end of year, new insurances, total income, claims paid, expenses of management, bonus, assurance fund, surplus share capital, position of burial, endowment and annuity branches.

— xxiv, 68. Gotha Mortality Table, F_x , actual deaths, nV_x , l_x , d_x , q_x , e_x , unadjusted and adjusted by two methods, at 3 per-cent.

Everett, J. D., xxxv, 454. Table of Coefficients for a new interpolation formula.

ORIGINAL TABLES. (1.) *Arranged according to Authors' Names—continued.*

- Fackler, D. P.**, xxxii, 272, 271. The effect of a decreasing rate of interest on Annuities and Policy Reserves. Values of Life Annuities of 1 payable at the end of each year, assuming that interest will be $4\frac{1}{2}$ per-cent for the next ten years, and thereafter decrease one-half of 1 per-cent each decade, until only 2 per-cent, after which remaining constant. Single and Annual Premiums for 1000 of whole-life insurance, with interest declining from $4\frac{1}{2}$ per-cent to 2 per-cent at the rate of one-half of 1 per-cent each decade. Comparative Reserves, based on the assumption of a declining rate of interest, with those derived from a 4 per-cent (and a 3 per-cent) table. Seventeen Offices' Mortality.
- Farr, Dr. W.**, ix, 204. Healthy Districts Table. $\lambda_x, l_x, d_x, l_{\infty}, p_x, q_x, Y_x, e_x, v+e_x$.
- Farren, E. J.**, i, 46. Comparison of π_x by Halley's Breslau Table of 1693 at 6 per-cent with Farr's Table of 1844 at 3 per-cent.
- v, 195. Average amounts of £100 at compound interest from 1 to 100 years at rates fluctuating between the limits of 0 and 6 per-cent per annum.
- Finlaison, A. J.**, xviii, 156-162, 167. Indian Uncovenanted Service Family Pension Fund. Unadjusted Data. Exposed to Risk. Subscribers, Sons, Wives and Widows, Unmarried Daughters; also summary Tables showing rates of mortality in groups of ages, and comparison with English rates; also Values of $l_x, d_x, \log l_x, \log p_x, p_x$, and q_x , at all ages in respect of Subscribers.
- Foot, H. and Manly, H. W.** See Manly, H. W. and Foot, H.
- Foster, Dr. T. A.**, xxv, 251. Average weight of persons of various heights, and Nosological Tables.
- Frankland, F. W.**, xxiv, 211. Mean population and deaths in New Zealand during 1874, 1878, and 1881, aggregate for the three years, and values of m_x .
- Fraser, D. C.**, xxxiv, 501. Table showing the yield on Stock sold at the end of 15 years at a premium on the price of purchase.
- xxxviii, 415. Table showing the Reserves of the Model Office (King's) by various groupings and a comparison of each with the Reserve, by an exact Net Premium valuation. HM 3 per-cent.
- Fulford, F. W.**, xxxv, 211. Percentage of Policy-values by Sprague's Select Life Tables to HM values. Interest 3 and 4 per-cent.
- xxxv, 215, 219, 223. Comparison of surrender-values of Life policies obtained by various formulas.
- Galsworthy, E. H.**, iv, 88. Mortality of Master Mariners (Neison's Data). A_x and π_x , at 3 per-cent.
- Grant, M. D.**, xl, 141. Mortality Tables for Ontario, 1901; also probabilities of life in the Healthy Districts of England, 1881-90, and in Scotland, 1891-1900.
- Gray, P.**, ii, 273. Carlisle 3 per-cent. $A_x, \log A_x, \log (1-A_x)$.
- vi, 198. Orchard's Theoretical Table of Mortality. $l_x, d_x, e_x; A_x$, and π_x at 3 per-cent; a_x at 3, 4, 5 and 6 per-cent.
- vii, 129. Carlisle Table adjusted by Gompertz's Method. $\log p_x, \log l_x, l_x, d_x, e_x$.
- x, 90. Commutation Tables (D_x, N_x, S_x, M_x , and R_x). Single male life. Government Annuitant Experience, 1860. Interest 4 per-cent.
- xi, 237. Annuities on two lives at 3 per-cent interest, deduced from adjustments of the Carlisle Table; with which the modifications are also compared.
- xii, 91. Table for the formation of logarithms and anti-logarithms to 12 places: $\log (1 + \cdot 001n), \log (1 + \cdot 001^2n), \log (1 + \cdot 001^3n)$.
- Gray, W. T.**, xx, 328. Comparative Reserves by the "Mixed" method of valuation, for various tables of mortality. Interest 4 per-cent.
- xxiv, 256. Rates of mortality, exposed to risk, and deaths, 3 per-cent annuities and policy-values, by following tables, namely, HM⁽¹⁰⁻⁴⁾, HM⁽⁵⁾, HM, and tables obtained by working out the withdrawals and existing of the HM data on various assumptions, and combining the results with the HM actual experience.

ORIGINAL TABLES. (1.) *Arranged according to Authors' Names.*

Gray, W. T. *continued.*

xxv, 369. Comparison of average rates of mortality deduced in various ways for age groups, HM data.

Halley, Dr. E., i, 15. Table based on the population of Breslau (1687-1691).

Hardy, G. F., xxiii, 1. Mortality in various Bonus Classes of British Empire Mutual Office; actual and expected deaths and annuity-values.

— xxv, 217. Indian Census Returns, 1881. Infantile mortality in various provinces. Migration statistics. Effect of famines on population. Distribution of males and females in decennial age groups, Madras. Comparison of native and European mortality in India. Birth and death rates in various provinces. Age distribution of male and female population of various provinces in quinary age groups, 1871, 1881. Mean duration of life at each 10th age for various provinces; males and females separately. Native Life Table for India, males and females, l_x, q_x, e_x . Ages 0, 5, 10, . . . 90.

— xxvii, 215. Friendly Societies. Table of Affiliated Orders in the United Kingdom, 1886. Aggregate Balance Sheet of 6,567 Societies. Experience of New Zealand Friendly Societies. Table of sickness rates in Danish Societies. Comparison of Essex Provident Society experience, 1876-80, with Neison's Rural Districts, 1836-40, and M.U. and A.O.F. Comparison of sickness and mortality rates in various Experiences. Effects of selection on sickness rates. Tables illustrating the financial effect of changes in the rates of sickness and mortality. Secession experience. Table showing the average deviations of deaths from the adjusted results, A.O.F. experience, 1871-5. Table showing the mean deviation of the observed sickness from the adjusted results, A.O.F. experience, 1871-5. M.U. and A.O.F. experiences—Monetary tables and values of sickness benefits.

— xxxi, 261. The Use of Scales of Premium reduced in anticipation of Future Bonuses. Reduction of Premiums by application of Bonus: Cash, Simple, Reversionary and Compound Reversionary Bonus. Abatements from whole-life policy-values to obtain reduced premium policy-values: Simple and Compound Reversionary Bonuses, HM 4 and $4\frac{1}{2}$ per-cent. Difference between the 3 per-cent and 4 per-cent. HM Policy-values (continuous).

— xxxii, 158. Preliminary tables for the temporary deductions to be made from the sums assured upon rated-up lives, in lieu of extra premium.

— xxxiii, 485. Mortality Experience of Assured Lives and Annuitants in France. Data, constants of graduation, expectation of life of assured lives and annuitants (unadjusted), as compared with the HM and Government Annuity Experiences. Net annual premium at 3 per-cent interest compared with those by the HM and 23 German Offices' Experience. Unadjusted Mortality Table, q_x, l_x, d_x, e_x , for assured lives, male and female, and annuitants, male and female. Comparison of actual with expected deaths according to the adjusted mortality tables. Comparison of mortality of annuitants and assured lives. Annuity values at 3 per-cent interest compared with other tables, for assured lives and annuitants.

— xxxiii, 491. Select net annual Premiums graduated by Makeham's formula, as compared with T. B. Sprague's HM Select Tables.

— xxxiv, 93. Tables for the computation of Compound Survivorship Annuity Values. ($\bar{a}_{\frac{1}{2}x}$). HM and Carlisle Mortality, 3 and 4 per-cent interest.

— xxxvii, 175-179. British Offices' Experience, 1893. Whole-Life Participating Assurances, Males, Select Mortality Tables: Net Annual Premiums, and Policy-values at 3 per-cent; compared with T. B. Sprague's HM Tables, and with HM and HM⁽⁶⁾ policy-values. Whole-Life Non-Participating Assurances, Males. Whole-Life Participating Assurances, females. Rates of Mortality, full Aggregate Tables and truncated Aggregate Tables. Comparison of q_x by different Mortality Tables.

ORIGINAL TABLES. (1.) *Arranged according to Authors' Names.***Hardy, G. F.** *continued.*

— xxxviii, 501-532. British Offices' Life Tables, 1893. Non-Participating Whole-Life Assurances, Males. Aggregate Table. Expected deaths and actual deaths; expectations of life; select Tables; expected A deaths; expected B deaths; graduation functions; expected and actual deaths; select mortality Tables, $l_{[x]+t}$, $\log l_{[x]+t}$, $d_{[x]+t}$, $\log d_{[x]+t}$, $p_{[x]+t}$, $\log p_{[x]+t}$, $q_{[x]+t}$, $\log q_{[x]+t}$, $\mu_{[x]+t}$, $\log \mu_{[x]+t}$; also select annuity values and select annual and single premiums for Whole-Life assurances at 3 per-cent.

— and King, G. See King, G. and Hardy, G. F.

— and Rothery, H. J., xxvii, 161. On the Mortality of Assured Lives in the West Indies (chiefly Barbados). Table of population according to complexion in Barbados in 1871, 1881. Barbados experience, 1840-82. Comparison of actual deaths with expected according to the Northampton and H^M Tables. Barbados Mutual Chief Office experience.—Tables giving the exposed to risk and died, and rates of mortality for the entire experience, and for the experience excluding the first two years of assurance. Barbados Mutual Agency experience.—Comparison of actual with expected deaths by the Barbados Mortality Table. West Indian experience.—Summary of Barbados Mutual, Scottish Amicable, and Standard experiences. Tables comparing the West Indies' mortality rates with those of Finlaison's East Indies and other tables, and a table showing the incidence of the extra mortality by means of the values of Makeham's constants, in the expression $A + Bc^x$. Analysis of deaths in the Barbados Mutual experience into their causes. Monetary Tables and policy-values (including compound reversionary bonuses) according to the Barbados Table, compared with H^M and Northampton. Interest at 3 and 4 per-cent.

Hardy, P., i, 8*. Values of Annuities-certain to pay certain rates of interest (5, 6, and 7 per-cent) on the purchase money during the whole term of their continuance, and to replace the original values at certain other given rates (3, $3\frac{1}{2}$, 4, and 5 per-cent).

— iii, 366. Equitable Experience, "Table A." (1762-1829). $\log l_x$, p_x , a_x , A_x , ϖ_x , at 3 per-cent.

— iv, 383. Values of Annuities-certain for any number of years not exceeding 100, at the rates of interest $1\frac{1}{8}$, $1\frac{3}{8}$, $1\frac{5}{8}$, $1\frac{7}{8}$, $2\frac{1}{8}$, $2\frac{3}{8}$, $2\frac{5}{8}$, $2\frac{7}{8}$, per-cent.

Hardy, R. P., xxx, 79. On the Formulae for determining the Value of Benefits according to the principle of *Collective Assurance*. Table of assurances and whole-life annuities due, and of deferred and temporary annuities, Carlisle 3 per-cent.

— xxxi, 81-84. Commutation Table and Value of Annuities and Single and Annual Premiums on the basis of the H^M Mortality Table with interest at $3\frac{3}{4}$ per-cent.

— xxxi, 115-146. Hearts of Oak Benefit Society. Sickness, Mortality, and Secessions experienced during the period 1884-91, embracing two years of the Influenza epidemic. Abstract of Accounts for each of the eight years 1884-91. Summary of Assets and Liabilities as per periodical valuations, 1884-91.

— xxxvi, 70. Table showing the effect of the rate of cessation when treated as a function of the rate of interest. Carlisle Table, 3 per-cent.

— xxxvi, 316-7. Specimens of Annual Premiums and Reserves. British Offices' Experience, 1893 (Male Whole-Life Participating Assurances) compared with H^M and H^{M(5)}. Interest 3 per-cent.

— xxxvii, 147. Comparison of full and truncated aggregate tables, British Offices' Experience, 1893 (Male Participating Assurances) and Institute Experience H^M and H^{M(5)}.

Hart, J. R., xxxiii, 308-9. Rates of Mortality among Government Officials on the West Coast of Africa.

Harvey, C. J., xxiv, 173. On Bonus Distributions. Bonuses, cash and reversionary, arising from surplus interest, and loading according to various bases of valuation; comparison with bonuses allotted by usual methods of distribution. Whole-life with-profit office premiums in use in 1883.

ORIGINAL TABLES. (1.) *Arranged according to Authors' Names continued.*

- Hewat, A.**, xxii, 286. Average rates of interest realized by British Life Offices, 1866-78. Average rates of bonus allotted by British Life Offices, 1870-79.
- and **Chatham, J.**, xxxi, 439-467. Mortality and Marriage rates and statistics deduced from the experience of the Widows' Funds of the Scottish Banks.
- Higham, J. A.**, i, 180. Tables analyzing the Seventeen Offices' Experience as regards the effect of selection.
- i, 198. Select Lives. Seventeen Offices' Experience. "Mixed Mortality", p_x, c_x, a_x at 3, $3\frac{1}{2}$ per-cent; "Class Mortality", $\mu_{x+t}, q_{x+t}, a_{x+t}$, at 3 and $3\frac{1}{2}$ per-cent, for $[x] = 25, 30, 35 \dots 75$.
- vii, 116. Sickness allowance to males engaged in heavy labour (from A. G. Finlaison's Data). D, N, and value of allowance of 1 a week in sickness, for the whole of life, at $3\frac{1}{4}$ per-cent.
- xxiii, 335. Graduation of HM data by three successive applications of his method, d_x, l_x, c_x .
- xxv, 15. Graduation, by his method, of Government Annuitants' Table, Females, 4 years after purchase, 1882. Graduation of HM Table by methods of Higham and Woolhouse, showing Woolhouse's final adjustments.
- Hodge, W. B.**, vi, 251. Table of Mortality in the Royal Navy arising from Battle or Shipwreck, 1793-1815, in actions between Fleets, 1782-1811, in attacks on Land Defences, 1797-1854, and in actions between single ships.
- Homans, S.**, xxxiii, 341. Schedule of the principal requirements of the various states of the American Union as regards Life Assurance Companies.
- Hooker, R. H.**, xxxvi, 362. Scope of the Censuses of the United Kingdom, the Colonies and Dependencies (*vide* G. H. Ryan's paper on Census Reform).
- Hopf, G.**, iii, 259. Tables illustrating the influence of the ages of the parents on the sex of children.
- v, 324. Tables showing the mortality experience by the Gotha Life Office during the years 1829-53, compared with other tables of mortality.
- Hume, A. S. and Stott, W.**, xxxiv, 397-412. Tables of values of whole-term policies, with limited number of premiums. HM 3 per-cent. Entry ages 15 to 60. All policy durations. Premiums limited to 10, 15, 20, 25, or 30 annual payments.
- xxxvi, 393-8. Annual Premiums for Endowment Assurances on two joint lives of equal age. HM 3 per-cent. Text-Book graduation. Ages 20, 25 to 60, 60. Term of assurance, 5 to 50 years. Ages at maturity not exceeding 70, 70. Also table of uniform seniority.
- xxxix, 373-5. Factors for contingent assurances. HM Text-Book graduation, and Carlisle Table, Makeham graduation. Interest 3 per-cent.
- Humphreys, G.**, xviii, 184. "Eagle" unsound lives. l_x, q_x, d_x, c_x .
- Humphreys, N. A.**, xxvii, 486. The Recent Decline in the English Death Rate and its effect upon the Duration of Life. Table of annual rates of mortality per thousand of males in England and Wales during each quinquennium of the years 1841-80, at various groups of ages. Similar table for females. Table showing mean annual mortality of males and females in England and Wales in the 17 years, 1838-54, and in the 5 years, 1876-80. Various English Life Tables based on these data.
- Hunter, A.**, xxxvi, 57. The effect of using the Lapse element in calculating premiums and reserves. Life and Commutation Tables. Net Premiums and Reserves. HM Mortality and Lapse Rates. Interest 3 per-cent.
- Jellicoe, C.**, i, 174. Bengal Military Mortality. 100 $q_x, p_x, \log p_x, \log l_x$, irregular and graduated, also $l_x, D_x, N_x, a_x, \varpi_x$ (from Neison's data at 4 per-cent). Also $l_x, D_x, N_x, a_x, \varpi_x$, and office premiums (from Woolhouse's data at 4 per-cent).

ORIGINAL TABLES. (1.) *Arranged according to Authors' Names.*

Jellicoe, C. *continued.*

— iv, 210-214. Eagle Experience. 100 q_x , \hat{e}_x , males and females; 100 q_x , l_x , d_x , \hat{e}_x , combined males and females, unadjusted; 100 q_x , l_x , d_x , \hat{e}_x , a_x , and ϖ_x , at 4 per-cent, ditto adjusted.

— vii, 134. Mortality among persons residing in foreign climates, or engaged in pursuits attended with extra risks (data collected by the Institute); 100 q_x , for lives resident in America, Asia, and Australia; also for marine and military risks.

Jopling, R. T., i, 308. Tables of ascertained suicides in London, 1846-8, arranged under sexes, ages, and causes of death. *See also* ii, 32.

King, G., xix, 398. Analyzed Mortality. $l_{[x]+n}$, $d_{[x]+n}$, $p_{[x]+n}$, $\hat{e}_{[x]+n}$; for $x=20, 25, 30 \dots 65$, and all values of n .

— xx, 233. Analyzed Mortality. $a_{[x]+n}$ at 3, $3\frac{1}{2}$, and 4 per-cent; also ${}_nV_x$ at 3 per-cent, for $x=20, 25, 30 \dots 65$, $n=5, 10, 15 \dots 50$.

— xx, 268. Comparison of Reserves by Combined H^M and $H^{M(5)}$ Tables with Reserves by various other Tables, at 3, $3\frac{1}{2}$, and 4 per-cent.

— xxiv, 186. Data from which Carlisle Table was formed; in original groups and distributed among ages; values of m_x .

— xxvi, 276. On the Numerical Calculation of the values of Complex Benefits. Table of values of $\log \mu$ and of μ , H^M Table, by formula $12 l\mu = 7(d_{-1} + d) - (d_{-2} + d_{+1})$.

— xxx, 291. On Family Annuities. Tables of bachelors, husbands, and widowers from the 1881 census, England and Wales. Table illustrating the orphanhood of children. Table of values of family annuities. Commutation tables for family annuities.

— xxxiii, 264-6. The Rates of Mortality among Female Nominees of the General Annuity Trust Fund. Data, Mortality Table, l_x , d_x , p_x , q_x , and \hat{e}_x . Annuity Values at $2\frac{1}{2}$ per-cent interest and comparison with Government Experience.

— xxxvii, 476-91. Reserves by H^M and $H^{M(5)}$, OM , $OM^{(5)}$, and combined OM and $OM^{(5)}$ Mortality Tables, at $2\frac{1}{2}$, $2\frac{3}{4}$, 3, $3\frac{1}{2}$, and 4 per-cent interest, and a comparison of each with the Reserve by the OM Table at 3 per-cent interest; also reserves by the OM Select Table at 3 per-cent interest, compared with the preceding, xl, 12.

— and Hardy, G. F., xxii, 191. On the application of Makeham's Formula to the Graduation of Mortality Tables. Graduation of Carlisle Table by methods of Woolhouse and Makeham, showing the effect of applying Woolhouse twice, and of different ways of applying Makeham. Graduation of H^M Table by Makeham's methods and comparison of actual deaths, with number expected by graduated q_x . Graduation of ages 10 to 25 of Carlisle and H^M Tables by special application of Makeham's method. Specimen annuity-values, single and joint-life, showing deviation introduced by graduation of H^M and Carlisle Tables by Makeham's method. H^M and Carlisle Tables graduated by Makeham's method; $\log l_x$, l_x , μ_x , a_x , a_{xx} , a_{xxx} , D_x , N_x , D_{xx} , N_{xx} , D_{xxx} , N_{xxx} . Interest 3 per-cent.

— and Newsholme, Dr. A., xxxvi, 138. On the alleged increase of Cancer. Table showing age distribution of population, 1881. Statistics of Scottish Widows' Fund Life Office. Population and deaths from Cancer in the United Kingdom, &c., &c.

Laundy, S. L., viii, 173. English Table, No. 1. $N_{x:n}$, $S_{x:n}$, $M_{x:n}$, $R_{x:n}$, at 3 per-cent ($x+n=60$).

— xi, 59. Annuity-values from age 60. Seventeen Offices' Experience, 3 per-cent interest.

— xi, 235. Table giving the half-yearly and quarterly premiums corresponding to yearly premiums, 1.00, 1.05, 1.10 \dots 10.00, 3 per-cent.

Levine, A., xxxiii, 516. On the mortality of assured lives in West Africa. Tables, for Europeans and Natives, of Exposed to Risk and Deaths under (a) ages at entry, and (b) ages attained.

— xl, 369. Continuous Temporary Annuities. $(\bar{a}_{M-\frac{n}{n+1}:n})$. OM $2\frac{3}{4}$ per-cent.

Lewis, J. N. and Dr. C. J., xl, 154. The variations in masculinity under different conditions.

ORIGINAL TABLES. (1.) *Arranged according to Authors' Names continued.*

Lewis, J. N., Manly, H. W. and Thomas, E. C. See Manly, H. W., Thomas, E. C. and Lewis, J. N.

Lidstone, G. J., xxx, 212. On an application of the Graphic Method to obtain a Graduated Mortality Table from a Limited experience, by means of a comparison with a Standard Table. Values of p_x , q_x , for the Marine and General experience, in respect of mariners' lives.

— xxxii, 96. Table of specimen Bonus additions according to the Premium System, the HM Loading System, and the Select Loading System; modifications of "Sprague's Method" for whole-life assurances. Ditto for endowment assurances, xxxii, 100.

— xxxiii, 356. Premiums for endowment assurances on two joint lives of equal ages. HM 4 per-cent.

— xxxiv, 61. Tables illustrative of several methods of valuation of Endowment Assurances in groups; of $-\Delta_x t_{x:n}$, HM 3 per-cent; of $Z_M = \text{Sum Assured} \times (1.09561)^{M-55}$, and of Continuous Temporary Annuities, HM 3 per-cent.

— xxxiv, 513. Table showing summary of valuation of endowment assurances in groups.

— xxxviii, 34 (*after*). Tables of $Z_M = \text{Sum Assured} \times (1.08)^{M-55}$ and of $Z_M = \text{Sum Assured} \times (1.093956)^{M-55}$, and OM and OM⁽⁵⁾ mortality respectively.

— xxxviii, 422. Table showing the effect of the various methods of grouping for valuation as regards:—

(1) The average assumed age at entry.

(2) The average assumed duration.

(3) The average assumed valuation age.

(4) The average reserved proportion of the net annual premium.

Low, G. M., xviii, 205. Expected Deaths in the Scottish Offices' Experience, according to the English Life Table, No. 1 (males), calculated by two different methods.

Lyon, Dr. T. G., xxix, 541. The Mortality amongst Europeans in certain unhealthy districts. Table showing the residents and deaths in Lagos, on the Gold Coast, Gambia, Sierra Leone, and India, 1878-1890.

— xxx, 120. Remarks on Consumption in Relation to Life Assurance. Table of causes of death of members of the Mutual Life Office who had a consumptive family history, and of the comparative ratio of the deaths from these causes.

Macaulay, T. B., xxiii, 62. Weight of male adults of various heights, ages, and occupations.

McCay, C. F., xxii, 24. Graduation of HMF observations and of HMF after 10th year, with reference to the weight of the observations.

McDonald, J., xxxii, 448-457. Annual and single endowment assurance premiums. Values of $\log D_{xx}$, $\log N_{xx}$, and a_{xx} . HM 2½ per-cent.

— and Burn, J. See Burn, J. and McDonald, J.

Macfadyen, J. R., xvii, 405. Table of a_x and $\log a_x$. Finlaison's (1860) Government Annuitants' Experience (males), combined observations. Interest 5 per-cent.

— xvii, 406. Surrender-values, when profit appears chiefly under the one aspect of interest. Also with modifications by Jellicoe's Formula.

McGowan, J., xxxvii, 24-26. Rates of contribution, or percentage deductions from salary, for Pension Funds. HM Mortality, 3, 3½, and 4 per-cent.

— xxxvii, 33. Rates of discontinuance in a pension fund.

Mackenzie, A. G., xxix, 185. On the Practice and Powers of Assurance Companies in regard to the Investment of their Life Assurance Funds. Average rate of interest earned by Life Offices on their funds as ascertained by averages in the Board of Trade Returns for 1872, 1883-1890. Table showing for all offices, and for 21 mutual offices, the classes of investments with the proportion of the funds invested in each class, for the years 1872, 1882, 1890.

McKenzie, D. J. McG., xxiii, 183. Logarithms of constant factors for transforming yearly annuities-certain to annuities payable n times a year; and fractional rates of interest corresponding to yearly rates.

ORIGINAL TABLES. (1.) *Arranged according to Authors' Names.***Mackenzie, D. J. McG.**—*continued.*

- xiii, 417. Momently rates of interest with factors for transforming yearly annuities-certain into momently annuities.
- xxiv, 251. Logarithms and anti-logarithms true to 10 places.
- McLauchlan, J. J.**, xxxiv, 251. Statistics as to the mortality in the British Navy and Army for the years 1856-95, but principally for 1886-95. Also comparison with the expected deaths by select life tables and the HM Table.
- Makeham, W. M.**, vi, 359. Adjusted mortality table. Eagle experience. l_x , d_x , and e_x .
- ix, 365. Carlisle Table, adjusted. l_x , d_x , and e_x .
- xii, 324. Carlisle Table. Mean duration of life re-adjusted by means of a modification of Gompertz's formula.
- xiii, 344. Adjusted Mortality Table, Finlaison's Males of Friendly Societies. l_x , d_x , q_x , e_x .
- xiv, 161. Extra Risk premiums for different classes of assurance.
- xv, 437. Table for determining the amounts, &c., of continuous annuities-certain; $\log \frac{e^x - 1}{x}$ for values of x , .00, .01, .02 . . . 10.40.
- xvi, 413. Sickness and Invalidism (A. G. Finlaison's Data). Tables showing the numbers of sick and healthy among l_x persons of age x ; also the number invalidated between ages x and $x+1$, the number of recoveries, &c.
- xvii, 312. Values of the integral of Gompertz's function, $\frac{1}{\log q} \cdot \frac{1}{10^{-10z} e^{-nz} c} \int_z^x 10^{-10z} e^{-nz} \cdot c \cdot dz$, for values of z from 1.0 to 1.9, and n from 1.0 to 1.4, proceeding by differences of .1.
- xxviii, 152-159, 185-192, 316-332. On the Further Development of Gompertz's Law. Comparison of actual with expected deaths according to the second development, in HM Table. Comparison of King's adjusted HM with Makeham's adjusted HM⁽⁵⁾ Table. Table of "actual" and "mean expected" errors in King's HM Table.
- Manly, H. W.**, xiv, 265. Values of policies by various tables of mortality and methods of valuation, namely, Carlisle, Seventeen Offices, English (No. 3) Males, English (No. 2) Males, Davies's Equitable, Edmonds's Mean Mortality, J. Finlaison's Government Annuity (Males), Northampton, and Hypothetical Tables, at 3, 3½, and 4 per-cent.
- xiv, 293. Comparative Reserves by various Mortality Tables and methods of valuation, at different rates of interest.
- xxiii, 233. Scale of office premiums to provide a specified bonus; HM 4 per-cent premiums loaded for expenses and bonus.
- xxvi, 208. Extract from a Report by L. G. Fouse on Standard Rates for Assessment Companies. Table of rates. Meech's tables of mortality and lapse. Table showing the working of an "Assessment" Fund under specified conditions.
- xxvii, 362. Formulas and Tables for applying Profits to converting Whole-Life Policies into Endowment Assurances, and to making Endowment Assurances payable at an earlier age. Table giving the multiples of .01 ($1+a_x$), for ages 15 to 65, HM 3½ per-cent. Table giving the values of $t_{-z-1} a_z$ and $\frac{t_{-z-1} a_z}{\Lambda_z}$ for $z=15$ to 80, HM 3½ per-cent, with the differences of these values divided by 12.
- xxx, 97. An attempt to measure the Extra Risk arising from a Consumptive Family History, when the Life proposed for Assurance is physically sound and healthy. Tables of observation, giving entered, exposed to risk, died, and expected deaths by HM Table, of persons with consumptive family history in the experience of the Mutual Life Assurance Society. Mortality tables derived from these. Annuity tables derived from these, 3½ per-cent. Corresponding table of endowment assurance premiums, 3½ per-cent.

ORIGINAL TABLES. (1.) *Arranged according to Authors' Names—continued.*

- Manly, H. W. and Foot, H.**, xxxviii, 111. 'Widows' and children's pensions. Table showing the method of ascertaining the value on the death of a husband, or widower, of the continuance of the Widows' Annuity until the youngest child reaches a certain age (14).
- xxxviii, 137. Mortality and Monetary Tables, Staff Pension Fund for Widows and Orphans. Hypothetical Experience, 1 and 3 per-cent.
- and **Thomas (E.C.)**, xxxvi, 260-276. Staff Pension Fund Hypothetical Experience. Rates of Mortality, Withdrawal and Retirement. Commutation Columns, Pension age 65, interest 1 per-cent. Special mortality table for finding annuity-values on invalid lives. Tables for valuing return of contribution with compound interest at 4 per-cent on death or early retirement, and for finding the value of a pension of 1 per annum for each year of service on early retirement. Average salaries. Valuation multipliers.
- and **Lewis (J.N.)**, xxxvii, 207-235. Staff Pension Fund Hypothetical Experience. Commutation columns. Valuation multipliers. Average salaries. Table for valuing return of contributions of 1 per annum with compound interest at 3 per-cent on death or early retirement; the values of annuities of 1 per annum on early retirement from ill-health; and for finding the value of a pension of 1 for each year of service on early retirement. Ditto for finding the accumulation of average salary at 3 per-cent compound interest, and the value of the last year's full salary on death, withdrawal or retirement. Pension ages 65 and 60. Interest 1 and 3 per-cent.
- Marshall, J.**, iv, 39. Mortality of Europeans and their descendants residing in Jamaica. c_x , p_x , q_x , l_x , $\log l_x$, $\log p_x$; a_x , A_x , ϖ_x , and $\varpi_x^1 \cdot i_1$, at 3 and 4 per-cent; $x + c_x$.
- Mathews, G. S.**, xxviii, 1. The Problem of Copyhold Fine Enfranchisement. Table for transforming Carlisle Life Annuity Tables into Copyhold Annuity Tables. Enfranchisement formulæ. Enfranchisement tables based on different assumptions as to ages of admission, and effects of alienation, for different rates of interest and manorial intervals.
- May, B. and Dunn, S. G.** See **Dunn, S. G. and May, B.**
- Meikle, J.**, xi, 48. Table for facilitating the calculation of survivorship annuities during one life, provided another die in n years; N_{xz}^1 , N_{xyz}^1 , Carlisle 4 per-cent.
- xxiii, 385. Hypothetical Mortality Tables giving equal policy-values at 3 per-cent interest.
- Mitchell, Sir A.**, xxviii, 426. Contributions to the statistics of Insanity, and to the study of the death rate of persons in Asylums. General summary of data. Table illustrating death rates among lunatics. Death rates in asylums of different kinds.
- Moir, H.**, xxxvi, 16. 11^M and Combined Experience compared for 4 per-cent Annuity-values, and 4 per-cent Annual Premiums per £100; showing also amount of Bonus purchased by the difference.
- xxxvi, 28. Comparison of Fund arising from the accumulation of premiums, with the corresponding reserve values. 11^M 3 and $3\frac{1}{2}$ per-cent. Full profit and discounted-bonus policies.
- Moore, R. M.**, xxxviii, 222. Comparative Mortality amongst Abstainers and Non-Abstainers assured in the United Kingdom Temperance and General Provident Institution, 1841-1901. l_x , d_x , p_x , q_x , D_x , N_x . Abstainers' Mortality (11^M) and 3 per-cent interest.
- Moors, E. M. and Day, W. R.**, xxxvi, 156. Population, Census Returns, and Deaths in New South Wales and Victoria. Tables of d_x , p_x , and μ_x . Mortality Tables and Values of \bar{a}_x at $3\frac{1}{2}$ per-cent deduced therefrom.
- Morgan, W.**, xii, 235. Equitable Experience (Table A). D_x , N_x , S_x , M_x , R_x , a_x , A_x , and ϖ_x , at 3 per-cent.
- Mountcastle, H.**, xv, 150. Table for facilitating the valuation of Absolute Reversions at 4, $4\frac{1}{2}$, 5, and $5\frac{1}{2}$ per-cent, according to the price of an annuity of 1 to the life tenant, by the formula $A = v - (1-v)a$; for values of a from 4 to 22, with quantities to be deducted for shillings and pence.

ORIGINAL TABLES. (1.) *Arranged according to Author's Names—continued.*

- Newsholme, Dr. A.**, xxxvi, 118. Table showing the registered deaths from Cancer in Ireland and Brighton, for the periods 1887-89, 1897-99 and 1889-91, 1898-1900 respectively.
- and **King, G.** See **King, G. and Newsholme, Dr. A.**
- Nicoll, J.**, xxxvi, 448. The German Accident Insurance Law. Table showing some of the results of its operations during the years 1886 to 1895.
- xxxvi, 479. Table showing the compensations allowed by the laws of various countries to workers injured by accidents, and to their dependants in case of death resulting therefrom.
- Nightingale, H. E.**, xxx, 9. Formulas and tables of values for life interests and reversions. Table of values of absolute reversions by formula $R_x = 1 - i(a_x + \frac{1}{2}A_x)$. Table of values of contingent reversions by formula $R_{x,y}^1 = 1 - P_{x,y}^1(1 + a_{xy}) - id_{xy}$. Values of a life interest in possession. Values of reversionary life interests. Complete annuity-values.
- Pagden, L. K.**, xxxiii, 361. Rates of Mortality in the Congo Free State.
- Paterson, W. B.**, xxvi, 465. On the Value of the Option of Withdrawal in Deferred Annuity-contracts. Table of specimen single premiums for deferred annuities.
- xxxv, 255-6. Charges upon an Absolute and upon a Contingent Reversion, and capital and annual charges upon a Reversionary Life Interest.
- Pearson, Karl and Beeton, Miss M.** See **Beeton, Miss M. and Pearson, Karl.**
- — and **Yule, G. U.** See **Beeton, Miss M., Yule, G. U. and Pearson, Karl.**
- Pell, M. B.**, xxi, 137. Effect of graduation on average mortality.
- xxi, 257. Births, deaths, and census returns in New South Wales, 1860 to 1875, males and females; mortality table, values of annuities, assurances and commutation columns based thereon.
- Pinckard, G. H.**, i, 274. Tables showing the experience of the Clerical, Medical and General Life Office amongst (1) Healthy; (2) Diseased lives; and comparisons with the Northampton and Carlisle Tables.
- Rea, C. H. E.**, xxxiv, 107. Table of Rates of Secession according to duration of policy (Industrial Assurances). Forms of valuation registers; Single life equivalents for two joint lives; Single whole-life ages equivalent to endowment assurances; values of continuous annuities; premiums, and assurances, with their logarithms, according to English Life Table (No. 3). Interest 3, $3\frac{1}{4}$, $3\frac{1}{2}$, $3\frac{3}{4}$, and 4 per-cent.
- Robertson, J. A.**, xxxii, 180. Anti-Logarithms. A re-arrangement of the four-figure table, as a mechanical aid to calculation.
- Robertson, Dr. W.**, xxii, 140. Births and deaths under age 5, Scotland, 1859 to 1874, males and females, and rates of mortality deduced therefrom.
- Rothery, H. J.**, xxviii, 483. Fines for Deferred Assurances with Deferred Premiums. Table of single premiums and fines for deferred assurances. $H(M) 3\frac{1}{2}$ and 4 per-cent.
- and **Hardy, G. F.** See **Hardy, G. F. and Rothery, H. J.**
- Rusher, E. A. and Schooling, F.** See **Schooling, F. and Rusher, E. A.**
- Ryan, G. H.**, xxiv, 19. On the subject of Extra Risks. Hypothetical mortality table deduced from $P_x (H^M 3 \text{ per-cent}) + .01, {}_nV'_x, \log a'_x, \log(1 + a'_x), \log p'_x, p'_x, q'_x, (q'_x - q_x), \frac{q'_x}{q_x}, {}_nV'_x, l'_x, d'_x, A'_x$, reserve including reversionary bonuses, and reduced net premium on expiration of extra risk if the same reserve is maintained.
- xxiv, 305. On the subject of Extra Risks. Extra premiums for two life assurances q'_x corresponding to various additions to $H^M 3$ per-cent $P_x, D_{ex}, D_{ef}, a_{ex}, a_{ex}, E_{ex}, E_{ex}, E_{ex}$ where E denotes extra premium and e and f are rated-up lives. Interest 3 per-cent.
- xxvi, 249. On the Method of estimating Expected Deaths and Expected Claims. Comparison of rates of mortality and loss in the Connecticut Mutual Experience.
- xxvi, 413. The Mortality Experience of the Marine and General Mutual Life Assurance Society in respect of Mariners' Lives. Tables showing the experience in different classes (A, captains, officers, surgeons, and pursers; B, engineers, stewards, and petty officers), and of mariners in eastern and in western trades.

ORIGINAL TABLES. (1.) Arranged according to Authors' Names.

Ryan, G. H. —continued.

— xxx, 189. On a Method for determining the Gain or Loss from Mortality in an Annuity Company. Illustrative table, valuation at 3 per-cent by Carlisle, Gov. (Fem.) Ann., 1883, average, and Gov. (Fem.) Ann., 1883, select.

— xxxii, 29. Tables for valuations for solvency in Life Assurance Companies.

— xxxvi, 357, 359, 360. Decennial rates of increase in population of England and Wales since 1801. Population of Europe. Birth and death rates in the United Kingdom and in other European States in 1874 and in 1899; showing the difference in the natural increases for the respective years.

— xxxviii, 82-3. Comparison of bases of valuation in use by 52 British Offices, 1870-1900.

Samot, D. J. A., xix, 266. Mortality Experience of the National Life Insurance Company of Rotterdam. d_x , l_x , $\log l_x$, q_x , e_x , and probable life time.

Scales, W. H., v, 216. Tables of Sickness and Mortality among European and Native troops in Madras Army, 1842-51.

Schjoll, O., xxviii, 89. The Mortality Experience of the Norwegian General Widows' Fund. Table for males, 1775-1885; Table for females, 1814-1885. Table of values of l_x , d_x , and a_x , at 4 per-cent for the Norwegian General Widows' Fund (Females), 1814-1885.

— xl, 209. Probabilities of Marriage, and of having children, under age 18; also average ages of wives. Norwegian and German statistics.

Schooling, F., xxxii, 311. English Life Table (No. 3). 3 per-cent Male and Female Joint Lives, the male the elder. Comparison of Annuity-values.

— and Rusher, E. A., xxxvii, 552. South African War, 1899-1902. Tables of Deaths, Exposed to Risk, and Resulting Monthly Death-rates; also tables for obtaining Single and Annual Premiums for the Assurance of £1, interest 3 per-cent, in respect of Assured Yeomanry and Volunteers. Table of Annuities obtained from yearly death-rates, and single and annual premiums for different age groups.

Searle, T. J., xxviii, 192. On a Table of Coefficients arising out of a given Mortality Table for finding Annuity-values at any rate of Interest. Table of Coefficients of powers of 10i in the formula $a_x = e_x - f_x(10i) + g_x(10i)^2 - h_x(10i)^3$, &c., for H^M Table.

— xxx, 493. On the Progress of Profit in a Life Assurance Fund.

Tables of "Mortality Multipliers" (or the ratio $\frac{q_x}{p_x}$) in various mortality tables, 525-530.

Shaw, C. G., v, 180. Carlisle 3 per-cent. Values of D, N, and a, on three four, five, and six, lives of equal age.

Smee, A. H. and Ackland, T. G., xxviii, 463. The assurance risks of warfare. Rates of war mortality in different European campaigns, 1854-1878. Net extra premiums for war risks at $3\frac{1}{2}$ per-cent. Death rate of troops serving at foreign stations. Extra premiums for climate and war risks.

— xxxiv, 368. Various tables giving rates of mortality, &c., applicable to the assessment of military and naval risks, with a table of premiums.

Smith, H. A., xi, 178. Table giving the annual premium corresponding to the single, for values of the single premium, 30, 30.1, 30.2, . . . 80,

3 per-cent; $\pi = (1-r) \frac{\Lambda}{1-\Lambda}$.

— xviii, 373. Indian military lives and civil lives (S. Brown's data). a_x and π_x , at 3 per-cent.

— xxii, 144. Endowment assurance annual and single premiums based on H^M 3 per-cent Table. $P_{x:n}$ and $\Lambda_{x:n}$ for $x=15$ to 60 and $n=5$ to 60, but $x+n$ not greater than 75.

Smyth, E., xxi, 381. Emfranchisement of copyholds, years' purchase of net annual value of property to be paid for enfranchisement, at 3 and 4 per-cent interest, metropolitan, urban, and rural districts.

ORIGINAL TABLES. (1.) *Arranged according to Author's Names—continued.*

- Sorley, J.**, xxi, 192. Premiums, policy-values, reserves of model office, adjusted for initial expenses and for medical selection.
- xxi, 309. On the graduation of mortality tables. Woolhouse's graduation of HM^F observations; Δq_x and comparison of actual and expected deaths. Graduation of Carlisle Table by Makeham's method; deviation of l_x by ordinary, aggregate, and combined methods. Graduation of HM^F data by different methods; q_x for ages 10 to 30.
- Spencer, J.**, xxxviii, 312-3. OM Table. Graduated by his 21-term formula. Comparison of expected and actual deaths.
- Spens, W.**, x, 78. Select Lives, Scottish Amicable Experience. $q(x)$, $q(x)+1$, $q(x)+2$, $q(x)+3$, $q(x)+4$, $q(x)+5$; $q(x)$ at 4 per-cent.
- x, 198. Seventeen Offices' Table (town males). Numbers exposed to risk, actual and expected deaths, by English Life Table (No. 2).
- Sprague, A. E.**, xxxiii, 288. Rates of mortality in certain parts of Africa.
- Sprague, T. B.**, viii, 18. Value of a Life Interest to allow the purchaser 5 per-cent on the outlay, according to the formula $\frac{1}{\varpi + .047619} - 1$, for values of ϖ , .015, .0155, .016080.
- xiii, 308. Table showing the addition to the value of annuities when paid half-yearly. Interest 3, 4, and 5 per-cent. Seventeen Offices' Experience.
- xiv, 432. Life Annuities, Immediate and Reversionary. (1) Policy and redemption money, when a life annuity of 1 is purchased, allowing for insurance at an average rate, and returning the purchaser 5 and 6 per-cent respectively on his outlay. $\text{Policy} = \frac{1}{\varpi + d}$, redemption money = $\frac{1-d}{\varpi + d}$. (2) Values of Reversionary Annuity, as found by Jellicoe's formula, $\frac{1}{p+d_5} - a_{xy|d_5}$, and by Sprague's $\frac{1}{p+d_6} - \frac{1}{2} - \left(1 - \frac{d_6}{2}\right)a_{xy|d_6}$, and $\frac{1}{p+d_5} - \frac{1}{2} - a_{xy|d_5} \left(\frac{p+d_6}{p+d_5} - \frac{d_6}{2}\right)$;
- (3) Annuity which 1 will purchase, and its redemption money, by the same three formulas.
- xv, 328. On the rate of mortality among assured lives as influenced by the duration of the assurance; numbers at risk; actual and computed deaths; probabilities of dying in a year; percentage of actual to computed deaths. Peerage Males, Seventeen Offices', and New Experiences.
- xviii, 313. Coefficients in Lubbeck's formula for summation: $\frac{n^2-1}{12n}$, $\frac{n^2-1}{24n}$, $\frac{(n^2-1)(19n^2-1)}{720n^3}$, $\frac{(n^2-1)(9n^2-1)}{480n^3}$, $\frac{(n^2-1)(863n^4-145n^2+2)}{60480n^5}$, and $\frac{(n^2-1)(275n^4-61n^2+2)}{24192n^5}$, for values of n from 2 to 11; and their logarithms.
- xxi, 77. On policy-values as affected by an increased mortality. Rates of mortality by Northampton, Carlisle, Davies' Equitable, and HM Tables. Tables of ratios of values of annuities-due, by Carlisle, Northampton, and Institute Tables, 3 per-cent, &c., to trace effect of increased mortality on policy-values. Values of $(1+a_x)$ and q_x by various hypothetical tables giving equal policy-values. Comparison of policy-values on various bases.
- xxi, 229. On the construction of Select Mortality Tables. Mortality during five years following medical selection, l_x , d_x , q_x , HM data. Mortality in first and second half-years following medical selection, as affected by duration of fatal illness. Annuity-values and commutation columns for five years following medical selection at 3 and 4 per-cent interest for quinary ages— HM data.

ORIGINAL TABLES. (1.) *Arranged according to Authors' Names.*Sprague, T. B. - *continued.*

- xxi, 106. Marriage and mortality observations of British Peerage families. Various probabilities of bachelors marrying and of marriages becoming fruitful. Comparison of mortality among bachelors and married men. Combined marriage and mortality table showing numbers living as bachelors and married men; decrements caused by bachelors dying, bachelors marrying, married men dying; number of bachelors marrying whose marriages are fruitful. Table of values of certain benefits depending upon the combined contingencies of marriage and mortality; table of commutation columns for same benefits; interest 3 per-cent.
- xxii, 77. Marriage statistics of widowers belonging to British Peerage families; years of life observed, died, married, central marriage rate for each year following widowhood, and ultimate central marriage rate.
- xxii, 117. Issue statistics (Scotland); number of unfruitful marriages at beginning of each year following marriage, number becoming fruitful, number dissolved by death, and probability of issue of marriage hitherto unfruitful.
- xxii, 269. Policy-values for durations, 1 to 10, by HM Table, combined HM and $HM^{(5)}$, combined Select and $HM^{(5)}$. Interest 4 per-cent.
- xxii, 352. Rates of marriage among widows and spinsters. Population of Scotland, 1870-1872.
- xxii, 359. Probability that a marriage entered into by a man above 40 will be fruitful. British Peerage families. Number of marriages observed and number fruitful and unfruitful; ages 40 to 79. Bachelors and widowers separately.
- xxii, 391. On Select Mortality Tables. Select Mortality tables HM data, q , l , d , D , II , M , a , for ages $[x]$, $[x] + 1 \dots [x] + 4$ combined with $HM^{(5)}$ values; $\pi_{[x]}$ and $A_{[x]}$ on same basis. Ages from $[15]$ to $[75]$. Interest 4 per-cent. Number of damaged lives, $(ul)_x$, contained in a body of mixed lives after various periods from medical selection; number of damaged lives dying each year, $(uq)_x$, $(uD)_x$, $(uII)_x$, $(uM)_x$, $(uat)_x$, $(uA)_x$, HM data. Interest 4 per-cent. Age of HM life equivalent to select life after 0, 1, 2, 3, 4, 5 or more years from medical selection. Values of policies at 4 per-cent on mixed and healthy lives by various combinations of HM , $HM^{(5)}$, and Select Tables; and also on assumption that first year's premium is absorbed by current risk and expenses. Effect on mortality of withdrawal of healthy lives, ages 35 to 40. HM data. Scale of office premiums for short term assurances based on select tables. Single and annual net premiums for short term assurances on select lives, on various assumptions as to withdrawal of healthy lives; half premiums first 5 years if all healthy lives withdraw; first year's risk on whole life assurances allowing for selection for and against office.
- xxiii, 221. Issue Policies in force, 1875 to 1880, sums assured, premiums received and average premiums.
- xxv, 54. Mean force of Navy at various stations, and percentages dying and invalided in 1878. Decennial age groups.
- xxv, 160. Probability of a marriage becoming fruitful, British Peerage families. Number of marriages observed, number becoming fruitful, number dissolved by death of husband, by death of wife, by divorce, number remaining unfruitful, for ages of husband at marriage in decennial groups and for each year following marriage. Observations grouped according to wife's age at marriage. Comparison with observations of Dr. Duncan and Mr. Ansell.
- xxv, 437. Mortality among Europeans in tropical Africa. Observations of 262.5 years of life.
- xxvi, 77. The graphic method of adjusting mortality tables, with an application to A. J. Finlaison's observations on the mortality of the Female Government Annuitants, four years and upwards after purchase. Comparison of adjusted values of q_x , ages 27-70, obtained by Higham, Finlaison, and Sprague. Comparisons of actual with expected deaths according to the several graduations. Complete table of adjusted values of q_x according to Sprague's graduation.

ORIGINAL TABLES. (1.) *Arranged according to Authors' Names.***Sprague, T. B.**— *continued.*

- xxvi, 391. Issue Policies in force, 1881 to 1885, sums assured, premiums received, and average premiums.
 - xxvi, 471. The Pole Star Life Insurance Company of Stockholm. Discontinuance table. Tables of the number of deaths in various insurance periods.
 - xxvii, 195. On the Probability that a Marriage entered into by a man of any age will be fruitful. Tables showing the marriages of the peers of 1870, and of their sons, brothers and uncles. Tables of marriages of peers and their sons, &c., distinguishing the marriages of men who married as peer or heir apparent, and who did not marry as peer or heir apparent. Tables of the adjusted probabilities that in these cases the marriage will be childless.
 - xxviii, 350. On the Premiums for Assurances against issue to Widowers, Bachelors and Married Men. Table showing ultimate re-marriage rate of widowers, comparison of percentage of childless marriages in Day's and Sprague's results. Single premiums as shown by Day's and Sprague's results, for an endowment at the second marriage of a widower. Table of central death and issue rates. Central marriage rates of chronic widowers. Combined marriage and mortality table for chronic widowers, ages 45 and upwards. Central marriage rates and combined marriage and mortality table for recent widowers. Commutation Tables, 3 per-cent, for chronic and for recent widowers. Tables of marriage endowments, and of assurances depending on marriage and birth of issue for chronic widowers, for recent widowers, for commencing widowers, and for bachelors. Mortality table for married men as deduced from peerage experience. Mortality table for females as deduced by Bailey and Day from peerage experience.
 - xxix, 59. Further Remarks on Woolhouse's Method of Graduation, with a comparison of the adjustments of the $H^{M(5)}$ Table by Woolhouse's, and the graphic methods respectively. Table showing the adjusted probabilities of dying in a year according to the graphic method. Similar table for Woolhouse's method.
 - xxix, 232. Final Remarks on Woolhouse's Method of Graduation, and a table showing its application to the Text-Book Table.
 - xxix, 548. Issue Policies in force, 1886 to 1890, sums assured, premiums received, and average premiums.
 - xxxi, 227. Comparison of the actual and expected deaths among the healthy female lives of the Scottish Equitable Life Assurance Society.
- Stark, Dr. J.**, xxii, 233. Mortality of married and unmarried males and females in Scotland, 1861 to 1864, and birth statistics; population and deaths in quinary age groups; ages of mothers at birth of first child.
- Stewart, J.**, xxxii, 268-271. A method of approximating to the effect of a reduction in the rates of interest used in calculating Reserves under whole-life policies.

Stott, J., xxi, 153. Mortality experience of Scottish Amicable Life Office in West Indies, 1846 to 1876. Exposed to risk, died, and expected deaths by various tables, given separately for Jamaica, Trinidad, other islands, and British Guiana. Comparison of actual and expected deaths in various years of assurance, and nosological tables.

Stott, W. and Hume, A. S. See **Hume, A. S. and Stott, W.**

Strachan, T. Y., xxvii, 48. Statistics of Mortality and Accidents among Miners, and of Re-marriages among their Widows. (Extracts from the Report to the Northumberland and Durham Miners' Permanent Relief Fund), Table A, showing the numbers of accidental deaths among married and single men, 1863-1887, in the fund; Table B, showing the widows' experience; Tables C and D, showing the duration of widowhood at each age in the experience; Table E, giving a comparison of deaths in the Widows' Fund with the English Life No. 3 and the H^F Tables; Table F, giving the experience of children, ages 0-12, in the Fund.

Stüssi, H., xviii, 352. Clergy Mortality. Casper's and Austrian (Ruthenian) Observations. l_x , d_x , p_x , q_x ; unadjusted and adjusted.

ORIGINAL TABLES. (1.) Arranged according to Authors' Names—continued.

- Sunderland, A. W., xxvi, 357. On Bonuses arising from Surplus Premiums and Surplus Interest. Tables of bonuses in an office arising from *interest* and *loading*. Special tables when the office experience is Sprague's Select Mortality 4 per-cent.
- xxvii, 81. On Risk Premiums for Survivorship Assurances. Tables for the calculation of these premiums at 4 per-cent, using Sprague's Select Mortality Tables (modified) for the insured life, and the Government Female Annuitants Analysed Table for the counter life. Comparison of above premiums for specimen ages, with the Carlisle and HM premiums. Tables showing the addition to these single and annual premiums to cover the risk of the insured life dying within one year after the counter life.
- xxviii, 257. On Bonuses on Endowment Assurance Policies. Table of bonuses arising from surplus interest and loading.
- xxix, 419. On the Method of treating Under-average Lives for Assurance purposes, by making Temporary Deductions from the Sums Assured. Tables showing the expectations of life, and for HM $3\frac{1}{2}$ per-cent and 4 per-cent, the deductions which should be made at all ages at entry from 15-60, corresponding to ratings-up of 5 years and 10 years.
- Sussmilch, J. P., i, 5, 15. Table of Mortality.
- Sutton, W., xx, 177. Table showing l_x from age 20 HM (unadjusted), and adjusted by various methods of graduation; also for Seventeen Offices' and Carlisle Experiences. Tables of a_x , A_x , P_x , at 3 per-cent, relative thereto. Comparative Reserves, xx, 184.
- xxviii, 417. On the Assessment System of Life Insurance. Tables of assessment rates and mortuary calls.
- Tarn, A. W., xxxiv, 542. Comparative table of mortality experienced by the A. M. P. Society, the Canada Life, and the South African Mutual Life Offices.
- Teece, R., xxii, 250. HM⁽⁰⁻⁴⁾ Table, exposed to risk, died, l_x , d_x , q_x .
- xxxvi, 98. The increase of Cancer. Tables showing mortality in England and Wales, per million living, at all ages. Population and deaths from Cancer, &c., &c.
- Terry, J., x, 141. Ratio of Distribution of Surplus at age of entry and at duration of policy. Higham's Combined Experience class mortality at $3\frac{1}{2}$ per-cent, and approximate mortality at 3 per-cent interest.
- Thiele, Dr. T. N., xvi, 43. Peerage Females Adjusted. l_x , d_x , $\log l_x$, q_x .
- Thiselton, H. C., xxxi, 56, 59. Free limits specified and not specified by latitude.
- Thomas, E. C. and Manly, H. W. See Manly, H. W. and Thomas, E. C.
- and Lewis, J. N. See Manly, H. W., Thomas, E. C. and Lewis, J. N.
- Thomson, H. A., xxxiv, 1. Various tables illustrative of methods of treating endowment assurance policies in periodical valuations.
- Thomson, S. C., xxi, 170. Rates of Mortality among licensed victuallers, in East and West Indies, and among annuitants, male and female.
- Thomson, W. T., i, 30*. Male lives selected for Government Annuities. $\log p_x$, l_x , and \bar{e}_x , for ages 76-94.
- Tilt, R. R., xxxii, 1. Some considerations suggested by the large number of existing at the close of the Institute observations of 1863. Complete and temporary expectations of existence. Analysis of "complete experience." New business of the contributing offices. Comparison of Reserves, HM with Analysed, HM and HM⁽⁵⁾ with Analysed.
- Todhunter, R., xxxiii, 319. Compound survivorship annuity functions for approximate evaluation. HM Text-Book graduation with 3 per-cent interest.
- xxxv, 25-7. Survivorship Assurance. Comparison of various functions and policy-values on different bases with similar functions and values derived from the Carlisle Table.

ORIGINAL TABLES. (1.) *Arranged according to Authors' Names—continued.*

- Tompkins, H.**, v. 10. Friendly Societies. Average sickness per annum. Finlaison, Ratcliffe, and Neison. Numbers out of which one will die. Ditto, average amount of sickness per annum; city, town, and rural, light labour, heavy labour. Mortality per-cent, light labour, heavy labour. Exclusions per-cent.
- Tucker, R.**, v. 161. Values of Reversionary Life Annuities. Northampton Table at 5 and 6 per-cent. Values of Contingent Reversions. Ditto, allowing for office premiums.
- Valentine, J.**, xviii, 233. Comparison of reserves by Institute $HM^{(5)}$ Table and HM Pure Premiums, with the reserves by HM , Carlisle, Seventeen Offices', English (No. 3), English (No. 2), Davies's Equitable, Edmonds' Mean Mortality, Government males (1829) and Hypothetical tables (Northampton and Manly's), at 3, $3\frac{1}{2}$, and 4 per-cent.
- Watson, A. W.**, xxxv, 268. The Methods of Analysing and Presenting the Mortality, Sickness, and Secession Experience of Friendly Societies, with examples drawn from the Experience of the Manchester Unity of Oddfellows. Expectation of Life by various standards. Comparison of Sickness Experience, A.O.F., 1871-75, and M.U., 1866-70. Mortality Experience of County Societies, and of the Widows' and Orphans' Fund (South London District); also Sickness Rates. Comparison of Actual and Expected Deaths, showing that the mortality amongst Members of Friendly Societies is a function of occupation as well as density of population. Relation of Sickness Cost to Valuation Standard. Expected and actual weeks sickness, classified by occupations. Table showing amount of Reserves on various bases of valuation for a "Representative Society", formed by combining certain Lodges of the M.U. Interest 3 per-cent. The effect of the duration of the non-recipient period elapsing before return to full pay as from beginning of sickness.
- Welton, T. A.**, xvi, 153. The effect of migration in disturbing local rates of mortality as exemplified in the Statistics of London and the surrounding country, for the years 1851-60.
- Westergaard, H.**, xxiii, 29. Mortality of Danish Clergy from 1650 to 1878, in periods of 50 years.
- White, F. W. and Whittall, W. J. H.**, xxiv, 385. Three hypothetical mortality tables based on HM Table, and showing respectively, an increasing, constant, and decreasing extra mortality. a_x , P_x , ${}_n P_x$, P_x^1 , ${}_n P_x^1$, $P_x^{\bar{n}}$, for each table. Policy-values for whole-life equal premium, and limited payment policies; paid-up policies under non-forfeiture regulations; values of endowment assurance policies.
- Whittall, W. J. H.**, xxiii, 188. Fatal accident rates in various occupations, England and Wales, 1870 to 1872; population and number of accidents.
- Willich, C. A. M.**, vii, 181. Hypothetical Carlisle Table. c_x by the formulas $\frac{2}{3}(81\frac{1}{2}-x)$ for values of x from 5 to 60; $\frac{1}{2}88\frac{2}{3}-x$ for $x=61$ to 74; and $\frac{1}{4}(103-x)$ for $x=75$ to 90.
- viii, 139. Hypothetical English (No. 1) Table, Males. $c_x = \frac{2}{3}(80-x)$ for values of x from 5 to 60.
- Wittstein, Dr. T.**, xxiv, 153. Graduation of Brune's Mortality Table (Prussian Widows' Fund, Males) by a method involving the weight of the observation.
- xxxiii, 408. Graduation of the HM Table by method of least squares.
- Woods, E.**, xxxii, 59. Values of endowment assurances for solvency in life assurance companies.
- Woolhouse, W. S. B.**, xi, 74. Tables to facilitate interpolation, for intervals 5 and 10.
- xi, 321. Force of Mortality, μ_x , Experience, Carlisle, and Davies's Equitable Tables.
- xv, 125. Northampton Table. $\log \mu_x$, μ_x and \bar{a}_x at 3 per-cent. Also δ and $\log \delta$ at rates of interest $\frac{1}{2}$, 1, $1\frac{1}{2}$, 2... 10 per-cent.

ORIGINAL TABLES. (1.) *Arranged according to Authors' Names.*

Woolhouse, W. S. B.—*continued.*

— xxvii, 433. An Easy Method of getting out a rough estimate Valuation of a Whole-life Assurance Business. Liability represented by the formula $\frac{1}{10} \sum kS - \left(1 + \frac{1}{i}\right) \left\{ \sum P - \frac{1}{10} \sum kP \right\} - \frac{1}{2} \sum P$, and tables, showing the values of k for groups of ages at 3, $3\frac{1}{2}$, and 4 per-cent for the Carlisle, H^M, English No. 3, Seventeen Offices', and other Mortality Tables. Similar tables for endowment assurances H^M 3, $3\frac{1}{2}$, and 4 per-cent.

Young, T. E., xxix, 269. The German Law of Insurance against Invalidity and Old Age. Tables of the probability of invalidity of Railway Employees, Miners, &c., Comparisons of mortality among "Invalids" and "Actives." Tables showing the numbers and ages of the persons included under the scheme. Tables of estimated contributions for different ages and according to annual incomes. Tables of invalidity rates, annuities, values of reversions to invalidity annuities and old age annuities, values of contributions for these benefits.

Yule, G. U., Beeton, Miss M. and Pearson, Karl. See Beeton, Miss M., Yule, G. U. and Pearson, Karl.

(2.) *Arranged according to subject matter.*

Absolute Reversions. See Reversions.

Abstainers' Mortality (T^M), 3 per-cent. R. M. Moore, xxxviii, 258.

Accident Insurance. Table showing some of the results of the operations of the German Law during the years 1886-1895. J. Nicoll, xxxvi, 448.

— Results of the Austrian Experience for the years 1890-94. J. Nicoll, xxxvi, 455.

Accidents, Fatal, in various occupations. W. J. H. Whittall, xxiii, 188.

— Statistics among Miners. T. Y. Strachan, xxvii, 48-58.

Affiliated Orders in the United Kingdom. G. F. Hardy, xxvii, 258.

Africa (Tropical). Mortality in. T. B. Sprague, xxv, 437; A. E. Sprague, xxxiii, 288.

— (West Coast). Mortality among Government Officials. J. R. Hart, xxxiii, 308.

— Mortality among European and Native Assured lives. A. Levine, xxxiii, 516.

Age Distribution of the Sexes on Marriage in Massachusetts (1844-51), and England (1846-8, 1851-3). S. Brown, vii, 195.

Age Distribution in Mortality Experience of Assured Lives. S. C. Chandler, Jr., xvii, 58.

American Assured Lives. Mortality Experience. S. Brown, viii, 184.

American Thirty Offices' Experience, for first ten Insurance Years. J. Chatham, xxix, 136, 137, 143, 145.

Analysed Mortality. G. King, xix, 398, xx, 233.

Ancient Order of Foresters' Experience. G. F. Hardy, xxvii, 311, 317, 324, 327, 336-41.

Annuitants (male and female), mortality among. S. C. Thomson, xxi, 190.

Annuities, At any rate of interest. T. J. Searle, xxviii, 204.

— Half-yearly, Table of additions to the value when so paid. T. B. Sprague, xiii, 308.

— On Two Lives, Adjusted Carlisle Table, 3 per-cent. P. Gray, xi, 237.

— Values from age 60, Seventeen Offices' Experience, 3 per-cent. S. L. Laundry, xi, 59.

— Values of Life Annuities, payable at the end of each year, at decreasing rates of interest. D. P. Fackler, xxxii, 272.

— $\frac{1}{\pi + d} - 1$, 5 per-cent, for different values of π . W. D. Biden, x, 263.

— Certain. P. Hardy, i, 8*, iv, 383. W. M. Makeham, xv, 437; D. J. McG. McKenzie, xxiii, 183, 417.

— Complete, for Single and Joint Lives. H. E. Nightingale, xxx, 31-36, 60-67.

— Compound Survivorship. Tables for their computation, H^M and Carlisle 3 and 4 per cent, G. F. Hardy, xxxiv, 93.

ORIGINAL TABLES. (2.) Arranged according to subject matter.

Annuities—continued.

- Continuous Temporary, H^M 3 per-cent, G. J. Lidstone, xxxiv, 82.
- — O^M $2\frac{1}{4}$ and 3 per-cent. S. G. Dunn and B. May, xxxviii, 51.
- — O^M $2\frac{3}{4}$ per-cent. A. Levine, xl, 369.
- Family. G. King, xxx, 301–312.
- In Clerks' Associations, Values of, with and without allowance for Withdrawals. T. G. Ackland, xxxiii, 184, 197.
- Rates of Manchester Corporation (Editorial), xxiv, 375.
- And Premiums. H^M $3\frac{3}{4}$ per-cent Commutation Table. R. P. Hardy, xxxi, 82.
- Annuity Company, Gain or Loss from Mortality in an. G. H. Ryan, xxx, 193.
- Anti-logarithms, A re-arrangement of the four-figure table, as a mechanical aid to calculation, J. A. Robertson, xxxii, 189.
- To 10 places. D. J. McG. McKenzie, xxiv, 251.
- Army (British) Mortality Statistics, 1866–95. J. J. McLauchlan, xxxiv, 251.
- Assessment, Tables of rates and mortuary calls in this system of Life Assurance. W. Sutton, xxviii, 422–3.
- Companies, Extract from L. G. Fouse's Report on Standard Rates, with Tables. H. W. Manly, xxvi, 208–213.
- Asylums, Death Rate in. Sir A. Mitchell, xxviii, 432–436.
- Australia, Population Statistics and Mortality Table. A. F. BurrIDGE, xxiv, 333.
- Barbados, Complexion of population in. G. F. Hardy and H. J. Rothery, xxvii, 163.
- Experience. G. F. Hardy and H. J. Rothery, xxvii, 166, 184–8.
- Barbados Mutual Experience. G. F. Hardy and H. J. Rothery, xxvii, 168–182.
- Birth Rates and Death Rates, In England and Wales, 1888–89. A. F. BurrIDGE, xxix, 461, 463.
- In the United Kingdom and in other European States, in 1874 and in 1899. G. H. Ryan, xxxvi, 360.
- Blindness, Statistics in British Population. A. F. BurrIDGE, xxv, 109.
- Bonus, Application of, to convert Whole-Life Policies into Endowment Assurances. H. W. Manly, xxvii, 362.
- Application of, to reduction of Premiums. G. F. Hardy, xxxi, 263, 265, 268.
- Average Rates of. A. Hewat, xxii, 286.
- Classes, Mortality in. G. F. Hardy, xxiii, 1.
- Purchased by Difference in H^M and Combined Experience compared for 4 per-cent annuity-values, and 4 per-cent annual premiums per £100. H. Moir, xxxvi, 16.
- Bonuses, compared with Profit from Loading. G. S. Crisford, xxv, 387.
- From Surplus Interest and Loading. C. J. Harvey, xxiv, 173.
- From Surplus Interest and Surplus Premiums. A. W. Sunderland, xxvi, 357.
- On Endowment Assurances. A. W. Sunderland, xxviii, 257.
- Reversionary, resulting quinquennially, assuming various scales of premiums, &c. H. W. Andras, xxxii, 360–364.
- Table of specimen Bonus additions, according to different systems, for whole-life and endowment assurances. G. J. Lidstone, xxxii, 96, 100.
- Breslan Population, by Dr. E. Halley (1693), and comparison of π_x at 6 per-cent with Farr's (1814) values at 3 per-cent, i, 45, 46.
- British Guiana, Mortality Experience of Scottish Amicable Life Office in. J. Stott, xxi, 159, 160.
- British Offices (52). Comparison of bases of valuation in use by, 1870–1900. G. H. Ryan, xxxviii, 82, 83.
- British Offices' Annuity Experience, 1863–1893. Values of $l_{[x]+t}$, $d_{[x]+t}$, $p_{[x]+t}$, $q_{[x]+t}$, and $e_{[x]+t}$, based upon a graduation by the Graphic Method. J. Chatham, xxxvii, 531–540.
- British Offices' Life Tables, 1893. Participating Whole-Life Assurances, Males. Comparison with H^M and $H^{M(5)}$. Specimens of Annual Premiums and Reserves, 3 per-cent. R. P. Hardy, xxxvi, 316, 317.
- Mortality and Monetary Tables deduced from different classes of the Assurance Experience. T. G. Ackland, xxxvii, 142.
- Comparison of full and truncated aggregate tables with those of the H^M and $H^{M(5)}$ Experience, 1863. R. P. Hardy, xxxvii, 147.

ORIGINAL TABLES. (2.) *Arranged according to subject matter.*

British Offices' Life Tables, 1893 —continued.

— Select Mortality Tables, net Annual Premiums, and Policy-values, 3 per-cent. G. F. Hardy, xxxvii, 175-179.

— Non-Participating Whole-Life Assurances, Males. Expected and actual deaths; expectations of Life; graduated Mortality Tables; select annuity-values and annual and single premiums for Whole-Life assurances at 3 per-cent. G. F. Hardy, xxxviii, 501-532.

Brown's Indian Civil and Military Experience. S. Brown, xvi, 206; H. A. Smith, xviii, 372.

Cancer, Mortality from. R. Teece, xxxvi, 98; Dr. A. Newsholme, xxxvi, 118; G. King and Dr. A. Newsholme, xxxvi, 138.

Carlisle Table. D. Chisholm, ii, 318; P. Gray, vii, 129; C. A. M. Willich, vii, 181; W. M. Makeham, ix, 365.

— 3 per-cent. A_x , $\log A_x$, $\log(1 - A_x)$. P. Gray, ii, 273.

— Instant of Death. C_x , M_x , \bar{A}_x , \bar{w}_x . D. Chisholm, iv, 89.

— Three, Four, Five, and Six Lives of equal age, D, N, and a . C. G. Shaw, v, 180.

— Two Joint Lives, 100 A and 100 π . W. Braid, v, 363.

— Three Lives, D, N, and a . W. Braid, vi, 115.

— Tables for the calculation of Survivorship Annuities. F. E. Colenso, xxx, 354-6.

— 4 per-cent Survivorship Annuities, N_{xz}^1 , N_{yz}^1 . J. Meikle, xi, 48.

— Force of Mortality. W. S. B. Woolhouse, xi, 324.

— Mean Duration of Life, readjusted by Gompertz's Modification. W. M. Makeham, xii, 324.

— Data. W. Sutton, xxiv, 113; G. King, xxiv, 193.

— Graduated by Methods of Woolhouse and Makeham, with Annuity-values and Commutation Columns. G. King and G. F. Hardy, xxii, 191.

— Contingent Assurance Factors. (Makeham's Graduation.) A. S. Hume and W. Stott, xxxix, 373-5.

Children of Dissenting Ministers. W. A. Bowser, xvii, 34.

Clergy Mortality. H. Stüssi, xviii, 352.

Clerks' Associations. Rates of Mortality, Withdrawal, and Non-employment.

Values of Assurances at Death, of Allowance during Non-employment, of Annuities and Net Premiums; with and without allowance for withdrawal. Reserve Values for Benefits, Commutation Columns, Values of Benefits, 3 per-cent. T. G. Ackland, xxxiii, 180, 184, 186, 196, 197.

Coefficients, For finding Annuity-values at any rate of Interest. T. J. Searle, xxviii, 204-213.

— For a new Interpolation Formula. J. D. Everett, xxxv, 454.

— And Logarithms of Coefficients for Interpolation in a Table of two Independent Variables. H. H. Edwards, xl, 291, 292.

Collective Assurance. Values of Benefits according to the principle of. R. P. Hardy, xxx, 84-5.

Commutation Tables, allowing for mortality and withdrawal. Clerks' Associations, 3 per-cent. T. G. Ackland, xxxiii, 197.

Comparative Reserves. $H^{M(5)}$ Experience with the H^M Pure Premiums, and various data. J. Valentine, xviii, 233.

— By the "mixed" method of valuation for various tables of mortality, 4 per-cent. W. T. Gray, xx, 328.

— H^M with Analysed, H^M and $H^{M(5)}$ with Analysed (prepared from figures given in G. King's paper, xx, 273), R. R. Tilt, xxxii, 17.

See also Original Tables (2), Model Office.

Compound Survivorship Annuity. Functions for approximate evaluation. R. Todhunter, xxxiii, 319.

Congo Free State. Rates of Mortality. L. K. Pagden, xxxiii, 361.

Connecticut Mutual Experience. Comparison of rates of Mortality and of Loss. G. H. Ryan, xxvi, 254.

— Comparison of the rates for Lives, Policies, and Amounts. J. Chatham, xxix, 85.

ORIGINAL TABLES. (2.) *Arranged according to subject matter—continued.*

- Consumption, in relation to Life Assurance. Dr. T. G. Lyon, xxx, 120-124.
 — Extra risk arising from. H. W. Manly, xxx, 101-8, 113-118.
 Contingent Assurance Factors. **H^M** (Text-Book) and Carlisle Table (Makeham Graduation), 3 per-cent. A. S. Hume and W. Stott, xxxix, 373-375.
 Contingent Reversions. *See* Reversions.
 Copyhold Enfranchisement. E. Smyth, xxi, 385, 398-401; G. S. Mathews, xxviii, 17, 50-60.
 Copyhold Scale of Compensation framed by the Land Commissioners, xxviii, 69-71.
 Danish Clergy, Mortality Experience. H. Westergaard, xxiii, 31, 33.
 Danish Friendly Societies, Sickness Rates in. G. F. Hardy, xxvii, 270.
 Davies's Equitable Table. W. S. B. Woolhouse, xi, 324.
 Deafness, Statistics in British Population. A. F. BurrIDGE, xxv, 109.
 Death Rate, Decline in the English. N. A. Humphreys, xxvii, 486.
 Death Strain, Table of Mortality Multipliers for computing. T. J. Searle, xxx, 525-530.
 Deferred Annuities, Single Premiums for, taking account of the option of withdrawal. W. B. Paterson, xxvi, 465-468.
 Deferred Assurances with Deferred Premiums. H. J. Rothery, xxviii, 483.
 Discontinuance Experience of Pole Star Life Insurance Company. T. B. Sprague, xxvi, 472.
 Discontinuance, Rates of. J. Chatham, xxix, 158-160, 170, 171.
 — In Clerks' Associations. T. G. Ackland, xxxiii, 181, 196.
 — Effect of, on Mortality. T. B. Sprague, xxii, 428; W. T. Gray, xxiv, 256.
 — In calculating Premiums and Reserves. A. Hunter, xxxvi, 57.
 — Valuation of Whole-Life Industrial Assurances, with allowance for. T. G. Ackland and J. Bacon, xxxviii, 570-601.
 Discounted-Bonus Policies and Full Profit Policies. Comparison of Fund arising from the accumulation of premiums, with the corresponding Reserve Values, **H^M** $3\frac{1}{2}$ and 3 per-cent. H. Moir, xxxvi, 28.
 Distribution of Surplus. Ratio at Age of Entry and at Duration of Policy. J. Terry, x, 141.
 Duration of Fatal Illnesses. T. B. Sprague, xxi, 241, 242.
 Duration of Life and Number of Offspring, Correlation between. Miss M. Beeton, G. U. Yule and Karl Pearson, xxxv, 472-475.
 Eagle Experience. C. Jellicoe, ix, 210; G. Humphreys, xviii, 181.
 — Adjusted Mortality Table. W. M. Makeham, vi, 359.
 Economic Experience. e_x and actual deaths compared with e_x Seventeen Offices' Table and expected deaths by Seventeen Offices' and Northampton Tables. J. J. Downes, vii, 79.
 — Comparison of the Rates for Lives, Policies, and Amounts. J. Chatham, xxix, 85.
 Emigration Statistics, British. A. F. BurrIDGE, xxv, 93.
 Endowment Assurances, Bonuses on. A. W. Sunderland, xxviii, 257.
 — On Two Joint Lives. Annual Premiums. **H^M** 3 per-cent, Text-Book Graduation. A. S. Hume and W. Stott, xxxvi, 393-398.
 — Policy-values. **H^M** $2\frac{1}{2}$ per-cent. A. D. Besant, xxxi, 367.
 — **H^M** 3 and $3\frac{1}{2}$ per-cent. D. Carment, xxii, 372, xxiii, 224.
 — Premiums. **H^M** $2\frac{1}{2}$ per-cent. J. McDonald, xxxii, 448.
 — **H^M** 3 per-cent. H. A. Smith, xxii, 144.
 — Single Whole-Life Ages equivalent to. C. H. E. Rea, xxxiv, 105.
 — Tables for Conversion of Whole-life Policies into, by application of Bonus. H. W. Manly, xxvii, 362.
 — Tables illustrative of various methods of valuation. H. A. Thomson, xxxiv, 1.
 — Tables illustrative of their valuation in groups. G. J. Lidstone, xxxiv, 61.
 — Table showing summary of Valuation by group method. G. J. Lidstone, xxxiv, 513.
 — Tables for their valuation in groups. G. J. Lidstone, xxxviii, 34 (*after*).

ORIGINAL TABLES. (2.) Arranged according to subject matter.

Endowment Assurances—continued.

— Tables of values of Continuous Temporary Annuities for valuing in groups. $OM\ 2\frac{1}{2}$ and 3 per-cent. S. G. Dunn and B. May, xxxviii, 51.

— Tables of Continuous Temporary Annuities. $OM\ 2\frac{3}{4}$ per-cent. A. Levine, xl, 369.

Endowments, on re-marriage of Widowers. T. B. Sprague, xxviii, 357-8, 372-5.

— On marriage of Bachelors. T. B. Sprague, xxviii, 376-7.

England, Census Returns. A. F. Burridge, xxv, 83.

— And Wales. Decennial rates of increase in population since 1801. G. H. Ryan, xxxvi, 357.

— Mortality in, 1841-80. N. A. Humphreys, xxvii, 501-8.

English Death Rate, Decline in the. N. A. Humphreys, xxvii, 486.

English Life Table, No. 1. ℓ_x . C. A. M. Willich, viii, 139.

— U_x , n , $S_{x:n}$, M_x , n , and R_x , n , 3 per-cent. S. L. Laundry, viii, 173.

— Reconstructed by Graphic Method. A. F. Burridge, xxiii, 324.

— No. 3. Values of \bar{a} , P , \bar{A} , at 3, $3\frac{1}{4}$, $3\frac{1}{2}$, and 4 per-cent, with their logarithms. C. H. E. Rea, xxxiv, 105.

— Nos. 3 and 4. l_x , ℓ_x . Males, Females. xxix, 30-31.

Equitable Experience (1762-1829). $\log l_x$, p_x , a_x , \bar{A}_x , π_x , at 3 per-cent. P. Hardy, iii, 366.

— "Table A." P. Hardy, iii, 366; W. Morgan, xii, 235.

— Davies's. W. S. B. Woolhouse, xi, 324.

— For the first ten Insurance Years. J. Chatham, xxix, 130-2, 143-5, 158-160.

Errors, Theory of, applied to King's H^M Table. W. M. Makeham, xxviii, 327.

Essex Provident Society Experience. G. F. Hardy, xxvii, 285, 311.

European and Native Troops in Madras Army, 1842-51, Sickness and Mortality among. W. H. Scales, v, 246.

Europeans in India, Mortality and Marriage Experience. S. Brown, xii, 276.

Evolution in Man. Correlation of Duration of Life and the Number of Offspring. Miss M. Beeton, G. U. Yule and Karl Pearson, xxxv, 472-475.

Existing in Institute Experience, 1863. Expectation of Existence. R. R. Tilt, xxxii, 6, 8.

Expectation of Life, Tables based on English Mortality in 1838-54 and 1876-80. N. A. Humphreys, xxvii, 501-8.

Expected Deaths in the Scottish Offices' Experience, according to the English Life Table, No. 1 (Males), calculated by two methods. G. M. Low, xviii, 205.

Expenses (Initial) Effect on Policy-values. J. Sorley, xxi, 192; T. B. Sprague, xxii, 410.

Exposed to Risk, and the Rates of Mortality and Withdrawal. Methods of Deducing. T. G. Ackland, xxxiii, 78, 82, 86, 92, 140, 148, 150, 154, 156.

Extra Risk. Annual Premiums for different classes of Assurance. W. M. Makeham, xiv, 161.

Family Annuities. G. King, xxx, 304-312.

Farr's Healthy English Table. Dr. W. Farr, ix, 204; W. Davis, x, 60.

Female Nominees in the General Annuity Trust Fund. Data, mortality functions, and annuity rates. G. King, xxxiii, 264-266.

Fines for Deferred Assurances with Deferred Premiums. H. J. Rothery, xxviii, 483.

Finlaison's (1860), Government Annuitants' Experience (Males) Combined Observations. a_x and $\log a_x$, 5 per-cent. J. R. Macfadyen, xvii, 405.

— Heavy Labour Sickness. D. N. and value of allowance of £1 a week in sickness for the whole of life. $3\frac{1}{4}$ per-cent. J. A. Higham, vii, 116.

— Indian Uncovenanted Service Fund. T. H. Cooke, xix, 224.

— Males of Friendly Societies. W. M. Makeham, xiii, 344.

— Sickness and Invalidism. W. M. Makeham, xvi, 413.

Fluctuating Rates of Interest. Average amount of £100 at compound interest at. E. J. Farren, v, 195.

Force of Discount. W. S. B. Woolhouse, xv, 125.

Force of Marriage. S. Brown, xvi, 206.

ORIGINAL TABLES. (2.) *Arranged according to subject matter—continued.*

- Force of Mortality.** W. S. B. Woolhouse, xi, 324; S. Brown, xvi, 206.
- Table of μ_x according to H^M and Carlisle Tables, by Makeham's formula, $\mu_x = -\log_e s - \{\log_e g \log_e q\} q_x$. G. King and G. F. Hardy, xxii, 216.
- Table of values of $\log \mu$ and of μ according to H^M Table by special formula. G. King, xxvi, 279.
- Foresters, Ancient Order of.** Mortality and Sickness Experience. G. F. Hardy, xxvii, 311, 317, 321, 327, 336-341.
- French Assured Lives and Annuitants.** Mortality Experience. G. F. Hardy, xxxiii, 485.
- Free limits specified and not specified by latitude.** H. C. Thiselton, xxxi, 56-59.
- Friendly Societies.** Comparative tables of Mortality and Sickness, and five theoretical tables. T. R. Edmonds, v, 113.
- **In France.** Tables of Mortality and Sickness. S. Brown, v, 214.
- Gompertz's Function.** W. M. Makeham, xvii, 312.
- Gompertz's Law.** W. M. Makeham, xxviii, 152-159, 185-192, 316-332. Application to H^M Table, xxviii, 158-159. Application to $H^{M(6)}$ Table, xxviii, 190.
- Gotha Table.** Dr. A. Emminghaus, xxiv, 68.
- Gotha Experience, 1829-1853, compared with other Mortality Tables.** G. Hopf, v, 324.
- **For the first ten Insurance Years.** J. Chatham, xxix, 128, 129, 143-5, 150-2, 154-5.
- Government Annuitants, 1860.** Commutation Table. Single Male Life. P. Gray, x, 90.
- Government Annuitants' Table, 1883, Graduation of.** J. A. Higham, xxv, 15; T. B. Sprague, xxvi, 77.
- Graduation, Effect on Average Mortality.** M. B. Pell, xxi, 137.
- **Graphic Method applied to a Limited Experience.** G. J. Lidstone, xxx, 212-218.
- Grouping of Policies for Valuation.** Table showing the effect of various methods as regards average assumed age at entry, duration, valuation age, reserved proportion of net annual premiums. G. J. Lidstone, xxxviii, 422.
- Hearts of Oak Benefit Society.** Sickness, Mortality, and Secession Experience, 1884-91. R. P. Hardy, xxxi, 115-144.
- H^F Table Graduated by Makeham's Method.** H. P. Calderon, xxxv, 188-190.
- H^M Table, Effect of Withdrawals and Existing on Mortality.** W. T. Gray, xxiv, 256.
- **Graduated by various methods, and compared with Seventeen Offices' and Carlisle Experiences.** Annuity and Assurance Values and Annual Premiums at 3 per-cent. W. Sutton, xx, 177.
- **Graduated by Higham's and Woolhouse's Methods.** J. A. Higham, xxiii, 335, xxv, 15; T. G. Ackland, xxiii, 354-355; D. Carnment, xxiv, 224.
- **Graduated by Makeham's Method.** G. King and G. F. Hardy, xxii, 191.
- **Graduated by Method of Least Squares.** Dr. T. Wittstein, xxxiii, 408.
- **Adjustment by Makeham's Second Development of Gompertz's Law.** xxviii, 158-9.
- **And Combined Experience, compared for 4 per-cent Annuity Values and 4 per-cent Annual Premiums per £100.** Amount of Bonus purchased by the difference. H. Moir, xxxvi, 16.
- **Contingent Assurance Factors (Makeham's Graduation).** A. S. Hume and W. Stott, xxxix, 373-5.
- **$H^{M(6)}$, Seventeen Offices', and Carlisle.** Comparative Reserves as brought out by various methods of graduation. W. Sutton, xx, 184.
- $H^{M(0-4)}$ Table, construction of.** R. Tecece, xxii, 250.
- **Rough, and graduated.** E_x, q_x, a_x , 3 per-cent. W. T. Gray, xxiv, 256.
- $H^{M(5)}$ Table.** Adjustment by Makeham's Second Development of Gompertz's Law, xxviii, 190.
- **Comparison of Adjustments by Woolhouse's Method and by Graphic Method.** T. B. Sprague, xxix, 59-71.

ORIGINAL TABLES. (2.) *Arranged according to subject matter—continued.*

- HMF** Graduation by Makeham's Method. S. Brown, xvi, 429.
 — Graduation by Woolhouse's Method. J. Sorley, xxii, 311, 316, 335.
HMF⁽³⁾ Table. W. A. Bowser, xvi, 149.
 Hodgson's Clergy Mortality. W. A. Bowser, xvii, 335.
 Hypothetical Mortality Tables. C. A. M. Willich, vii, 181, viii, 139.
 — Deduced from $P_x + 0.1$. G. H. Ryan, xxiv, 19.
 — Giving equal Policy-values. T. B. Sprague, xxi, 77; J. Meikle, xxiii, 385.
 — Showing effect of certain assumptions as to extra mortality. F. W. White and W. J. H. Whittall, xxiv, 385.
 Immigration Statistics, British. A. F. BurrIDGE, xxv, 93.
 India. Neison's Military Experience. C. Jellicoe, i, 174.
 — Woolhouse's Military Experience. C. Jellicoe, i, 174.
 — Mortality and Sickness among European and Native Troops, Madras Army, 1842-51. W. H. Seales, v, 245.
 — Brown's Civil and Military Experience. S. Brown, xvi, 206; H. A. Smith, xviii, 372.
 — Finlaison's Uncovenanted Service. A. J. Finlaison, xviii, 167; T. H. Cooke, xix, 224.
 — Mortality in various Provinces. G. F. Hardy, xxv, 217.
 Indies (East and West), Mortality in. S. C. Thomson, xxi, 180, 181.
 Inheritance of Longevity. From Father to Son, and in Brethren. Miss M. Beeton and Karl Pearson, xxxv, 127-129.
 Insanity, Statistics in British Population. A. F. BurrIDGE, xxv, 109.
 — Contribution to the Statistics of. Sir A. Mitchell, xxviii, 426-432.
 Institute Experience, 1863. Analysis of "Complete Experience." R. R. Tilt, xxxii, 8.
 — For first ten Insurance Years. J. Chatham, xxix, 132-4, 143-5, 158-160, 170-2.
 Interest, fractional rates corresponding to annual rates. D. J. McG. McKenzie, xxiii, 184.
 — Momently rates. D. J. McG. McKenzie, xxiii, 417.
 — Realized by Life Offices. A. Hewat, xxii, 286; D. Deuchar, xxviii, 450, 451, 452; A. G. Mackenzie, xxix, 191.
 — Yield on stock, sold at the end of 15 years at a premium on the price of purchase. D. C. Fraser, xxxiv, 501.
 Interpolation, Tables to facilitate. W. S. B. Woolhouse, xi, 74.
 Invalidity in different classes in Germany. T. E. Young, xxix, 306, 307, 309, 355.
 Invalidity Annuities. Tables of the values of these and of the contributions therefor. T. E. Young, xxix, 355-361.
 Invalid Lives. Mortality Experience of the Clerical, Medical and General Life Office. G. H. Pinckard, i, 274.
 Invalids. Comparison of rates of Mortality among "Invalids" and "Actives." T. E. Young, xxix, 310-313.
 Investments chosen by Life Offices for their Funds. A. G. Mackenzie, xxix, 193, 195.
 Ireland, Census Returns. A. F. BurrIDGE, xxv, 83.
 Issue, Assurances. A. Day, viii, 133; T. B. Sprague, xxiii, 221, xxvi, 391, xxviii, 350, xxix, 549; D. M. Carment, xxxi, 386.
 — Correlation between duration of life and the number of. Miss M. Beeton, G. U. Yule and Karl Pearson, xxxv, 472-475.
 — Of Marriage hitherto unfruitful. T. B. Sprague, xxii, 117.
 — Probability of, British Peerage Families. T. B. Sprague, xxii, 359, xxv, 160.
 — Values of Benefits depending on. T. B. Sprague, xxi, 406.
 Jamaica. Mortality Experience of Europeans. J. Marshall, iv, 39.
 — Mortality Experience of Scottish Amicable Life Office in. J. Stott, xxi, 158-168.
 Joint Lives. Values of D, N, and a . Three, four, five and six lives of equal age. Carlisle 3 per-cent. C. G. Shaw, v, 180.
 — 100 A and 100 π . W. Braid, v, 363.

ORIGINAL TABLES. (2.) *Arranged according to subject matter.*Joint Lives—*continued.*

- Values of D , N , and a . Three Lives. Carlisle 3 per-cent. W. Braid, vi, 115.
- Tables for computing the values of Joint Life and Survivorship Benefits where not more than four lives are involved. Carlisle, 3 per-cent. F. E. Colenso, xxxii, 187–193.
- Values of $\log D_{xx}$, N_{xx} , and a_{xx} . HM $2\frac{1}{2}$ per-cent. J. McDonald, xxxii, 457.
- Endowment Assurance Premiums on two lives of equal age. HM 4 per-cent. G. J. Lidstone, xxxiii, 356.
- — HM 3 per-cent. A. S. Hume and W. Stott, xxxvi, 393–8.
- Single Life equivalent for two. C. H. E. Rea, xxxiv, 105.
- Annuities. Comparative values by different methods of approximation. Three lives, Carlisle 3 per-cent. J. Buchanan, xxxvii, 398–399.
- Comparative Values. Male and Female. English Life Table, No. 3, 3 per-cent. Male the elder. F. Schooling, xxxii, 311.

Lapses. *See* Original Tables (2), Discontinuances.

Licensed Victuallers, Mortality among. S. C. Thomson, xxi, 178.

Life and Commutation Tables, based on HM Mortality and Double Lapse Rate. A. Hunter, xxxvi, 57.

Life Interests. T. B. Sprague, viii, 18, xiv, 432; W. D. Biden, x, 263; H. E. Nightingale, xxx, 31–36, 47–70.

Liquor Trade, Mortality among those engaged in the. Associated Scottish Life Offices' investigation, xxxiii, 254.

Locality, Comparative Mortality according to. M. N. Adler, xii, 274.

Logarithms, to ten places. D. J. McG. McKenzie, xxiv, 251.

— To eight places. J. Chisholm, xxvi, 57–8.

— And Anti-Logarithms to twelve places. P. Gray, xii, 91.

London, Census Returns. A. F. Burridge, xxv, 83.

Longevity, Inheritance of. From father to son, and in brethren. Miss M. Beeton and Karl Pearson, xxxv, 127–129.

Lubbock's Formula for Summation, Coefficients in. T. B. Sprague, xviii, 313.

Madras Military Fund. Mortality and Marriage Experience (1808–57). S. Brown, xi, 25.

Makeham's Hypothesis. Model tables with which to compare the deduced functions of an ungraduated table. H. P. Calderon, xxxv, 176–187.

Manchester Unity Sickness and Mortality Experience. G. F. Hardy, xxvii, 311, 330–5; A. W. Watson, xxxv, 268–322.

Marine and General Mutual Experience in respect of Mariners' Lives. G. H. Ryan, xxvi, 413; G. J. Lidstone, xxx, 217.

Mariners (Neison's data). E. H. Galsworthy, iv, 88.

Marriage. A. Day, viii, 133, x, 186; S. Brown, xvi, 206.

— Probabilities of. T. B. Sprague, xxi, 406, xxii, 77, 352.

— — And Statistics in Widows' Funds of the Scottish Banks. A. Hewat and J. Chatham, xxxi, 439–467.

— — And of having children, under age 18; also average age of wives. Norwegian and German Statistics. O. Schjoll, xl, 209.

— Statistics in British Population. A. F. Burridge, xxv, 104.

— Values of Benefits depending on. T. B. Sprague, xxi, 406.

— And Mortality Tables. T. B. Sprague, xxi, 406, xxviii, 361, 363–6.

See also Endowments.

Marriages, Fruitful. J. Chatham, xxvii, 37; T. B. Sprague, xxvii, 195.

Medical Report Forms, Analysis of. J. Chisholm, xxv, 411.

Migrations. Their effect on local rates of mortality. T. A. Welton, xvi, 153.

Military and Naval Lives, Death Rates among. A. H. Smeed and T. G. Ackland, xxxiv, 368.

Miners, Statistics of mortality and accidents among. T. Y. Strachan, xxvii, 48.

Model Friendly Society. A. W. Watson, xxxv, 301–302, 319–322.

Model Office, Comparative Reserves by various mortality tables and methods of valuation, at different rates of interest. H. W. Manly, xiv, 293.

— Reserves by various tables of mortality at various rates of interest. G. King, xx, 268.

ORIGINAL TABLES. (2.) *Arranged according to subject matter.*Model Office—*continued.*

- Reserves adjusted for initial expenses and medical selection. J. Sorley, xxi, 192.
- Reserves by various groupings, and Comparisons with Reserve by exact net premium valuation. HM 3 per-cent. D. C. Fraser, xxxviii, 415.
- Reserves by various tables of mortality, at various rates of interest, and a comparison of each with the Reserve by the OM Table at 3 per-cent. G. King, xxxvii, 476-491, xl, 12.
- Valuations. Bonuses and their relations to Reserves. J. Buchanan, xxxix, 261-298.

Model Offices. D. Carment, xxi, 74.

Mortality, Among Germans engaged in the Franco-German War, 1870-1. A. H. Snee and T. G. Ackland, xxxiv, 384, 385.

- Among Military and Naval Lives. A. H. Snee and T. G. Ackland, xxxiv, 368.
- (Average) in age groups, HM data. W. T. Gray, xxv, 369.
- As affected by selection and withdrawals. R. Teece, xxii, 250; T. B. Sprague, xxi, 229, xxii, 428; W. T. Gray, xxiv, 256.
- Deduced from the Census Returns for Ontario, 1901, and the deaths for the year ending 31 March 1901. M. D. Grant, xl, 141.
- Experience of the Australian Mutual Provident Society, Canada Life, and South African Mutual. Comparative table. A. W. Tarn, xxxiv, 542.
- Experience of the Imperial Forces during the War in S. Africa, 1899-1902. F. Schooling and E. A. Rusher, xxxvii, 552.
- Extra. G. H. Ryan, xxiv, 19; F. W. White and W. J. H. Whittall, xxiv, 385.
- Fluctuations in the rate of, in England and Wales. A. F. Burridge, xxix, 459.
- From various classes of diseases. W. R. Dovey, xxiii, 285.
- Gain or Loss in an Annuity Company. G. H. Ryan, xxx, 193.
- In different Bonus Classes. G. F. Hardy, xxiii, 1.
- In the British Navy and Army, J. J. McLauchlan, xxxiv, 251.
- In Clerks' Associations. T. G. Ackland, xxxiii, 180-196.
- In the Colonies and in Foreign Countries. America, Asia, and Australia, C. Jellicoe, vii, 134; East and West Indies, S. C. Thomson, xxi, 170; Australasia, M. B. Pell, xxi, 257; A. F. Burridge, xxiii, 309, xxiv, 333; F. W. Frankland, xxiv, 241; E. M. Moors and W. R. Day, xxxvi, 151; India, G. F. Hardy, xxv, 217; Africa, T. B. Sprague, xxv, 437; Dr. T. G. Lyon, xxix, 541; A. E. Sprague, xxxiii, 288; J. R. Hart, xxxiii, 308; L. K. Pagden, xxxiii, 361; A. Levine, xxxiii, 516; United States of America, J. Chatham, xxix, 141; France, G. F. Hardy, xxxiii, 485.
- In Friendly Societies. A. W. Watson, xxxv, 271-284.
- Infantile. M. B. Pell, xxi, 257; Dr. W. Robertson, xxii, 140; A. F. Burridge, xxiii, 317, xxiv, 348; G. F. Hardy, xxv, 217.
- In the Navy. T. B. Sprague, xxv, 54.
- Multipliers. T. J. Searle, xxx, 525-530.
- Of Married and Unmarried Males and Females. Dr. J. Stark, xxii, 233; A. Hewat and J. Chatham, xxxi, 439-467.
- Of Married Men and Bachelors. T. B. Sprague, xxi, 406.
- And Marriage Experience of the Widows' Funds of the Scottish Banks. A. Hewat and J. Chatham, xxxi, 139-467.
- National of Rotterdam, Mortality Experience. D. J. A. Samot, xix, 266.
- Naval Operations, Mortality in. W. B. Hodge, vi, 254.
- Navy, Mortality in, 1856-95. J. J. McLauchlan, xxxiv, 251
- Mortality and Sickness in. T. B. Sprague, xxv, 54.
- Neison's Indian Military Experience. C. Jellicoe, i, 174.
- Mariners' Experience. E. H. Galsworthy, iv, 88.
- New Business of the Offices contributing to the Institute Mortality Experience, 1863. R. R. Tilt, xxxii, 12, 13.

ORIGINAL TABLES. (2.) *Arranged according to subject matter—continued.*

- New South Wales, Population, Statistics, and Mortality Tables, &c.** M. B. Pell, xxi, 257; A. F. BurrIDGE, xxiv, 333; E. M. Moors and W. R. Day, xxxvi, 156.
- New York Mutual Experience, First ten Insurance Years.** J. Chatham, xxix, 131-5, 143-5, 158-160.
- New Zealand, Mortality of Population.** F. W. Frankland, xxiv, 211.
- **Friendly Societies, Experience of.** G. F. Hardy, xxvii, 262.
- Non-employment in Clerks' Associations.** T. G. Ackland, xxxiii, 182, 197.
- **Values of Benefits, with and without allowance for Withdrawal.** T. G. Ackland, xxxiii, 184, 197.
- Non-forfeiture Conditions, effect on Paid-up Policies and Surrender-Values.** G. S. Crisford, xxi, 331.
- Northampton Table, Force of Mortality, &c.** W. S. B. Woolhouse, xv, 125.
- Norwegian General Widows' Fund, Mortality Experience.** O. Schjoll, xxviii, 94-98.
- Nosological Tables.** J. Stott, xx, 39, xxi, 166, 168; W. R. Dovey, xxiii, 285; A. F. BurrIDGE, xxxiii, 314, xxix, 465-467; Dr. T. A. Foster, xxv, 251; G. F. Hardy and H. J. Rothery, xxvii, 182; Dr. T. G. Lyon, xxx, 122, 123; M. D. Grant, xl, 137.
- Occupation. Comparative Mortality.** Farr's and Ratcliffe's Observations. M. N. Adler, xii, 273.
- **Statistics in British Population.** A. F. BurrIDGE, xxv, 110.
- Old Age Annuities in Germany.** T. E. Young, xxix, 355-361.
- OM Tables.** Graduated by his 21-term formula. Comparison of Expected and Actual Deaths. J. Spencer, xxxviii, 342-3.
- Orchard's Theoretical Mortality Table.** P. Gray, vi, 198.
- Paid-up Policies.** G. S. Crisford, xxi, 324, 331, 348.
- Patriotic (Russian War) Fund.** Rates of re-marriage and mortality amongst Widows in receipt of relief during the period 1854-1900. J. Burn and J. McDonald, xxxviii, 453.
- Peerage, Mortality Tables deduced from the experience of the.** T. B. Sprague, xxviii, 377, 378.
- **Families.** A. H. Bailey and A. Day, ix, 319; A. Day, x, 186.
- **Re-marriage Statistics.** A. Day, xii, 191.
- **Females.** Dr. T. N. Thiele, xvi, 43.
- **Males.** G. W. Berridge, xii, 225.
- Peers, Marriages of, in 1870.** T. B. Sprague, xxvii, 204-7, 209-11.
- Pension Funds.** H. W. Manly and E. C. Thomas, xxxvi, 260-276; H. W. Manly, E. C. Thomas and J. N. Lewis, xxxvii, 207-235.
- **Rates of Contribution, or percentage deductions from salary.** HM 3, 3½, and 4 per-cent. J. McGowan, xxxvii, 24-26.
- **Rates of Discontinuance.** J. McGowan, xxxvii, 33.
- **For Widows and Orphans.** H. W. Manly and H. Foot, xxxviii, 137-159.
- Phthisis, hereditary and acquired.** (Editorial), xxiv, 443.
- **The declension of, in 1891-5.** Sir H. Beevor, xxxiv, 585-6.
- Pole Star Life Insurance Company, Discontinuance Experience.** T. B. Sprague, xxvi, 471.
- Policy-values.** By various mortality tables and methods of valuations at different rates of interest. H. W. Manly, xiv, 265.
- **Adjusted for initial expenses and medical selection.** J. Sorley, xxi, 192; T. B. Sprague, xxii, 410.
- **As affected by an increased mortality.** T. B. Sprague, xxi, 77.
- **By Combined HM⁽⁵⁾ and HM, and HM⁽⁵⁾ and Select Tables.** T. B. Sprague, xxii, 269.
- **For Endowment Assurances.** HM 3 and 3½ per-cent. D. Carment, xxii, 372, xxiii, 224.
- **HM 2½ per-cent.** A. D. Besant, xxxi, 367.
- **By Reassurance Method, compared with Net Values.** G. S. Crisford, xxv, 387.
- **HM 4 per-cent.** Subject to Contingent Debts. D. Carment, xxxi, 78.
- **Difference between HM 3 and HM 4 per-cent.** G. F. Hardy, xxxi, 266.

ORIGINAL TABLES. (2.) Arranged according to subject matter.

Policy-values - continued.

- Reduced Premium. Abatement from whole-life to obtain. G. F. Hardy, xxxi, 266, 269.
- Whole-term policies, with limited premiums. H^M 3 per-cent. A. S. Humie and W. Stott, xxxiv, 397-412.
- Percentage of Sprague's Select to H^M . 3 and 4 per-cent. F. W. Fulford, xxxv, 211.
- Population of England and Wales, 1801-50, and Births, Marriages, and Deaths (Females), 1700-1850. T. R. Edmonds, ii, 67.
- Population of Europe. G. H. Ryan, xxxvi, 359.
- Premiums, Annual from Single. 3 per-cent. H. A. Smith, xi, 178.
- Half-yearly and quarterly, for any rate of mortality. 3 per-cent. S. L. Laundry, xi, 235.
- For Contingent Assurances, H^M 4 per-cent. J. Chatham, xxv, 439.
- For Endowment Assurances, H^M 3 per-cent. H. A. Smith, xxii, 144.
- For Endowment Assurances on two Joint Lives of equal ages. H^M 4 per-cent. G. J. Lidstone, xxxiii, 356.
- For Issue Assurances. T. B. Sprague, xxviii, 359.
- For Short-Term Assurances. Select Mortality. T. B. Sprague, xxii, 439.
- For Survivorship Assurances. $H^{[M]}$ (Modified) and Government Annuitants (Females), H^M and Carlisle, 4 per-cent. A. W. Sunderland, xxvii, 81.
- For various classes of Assurance, H^M and Lapse Rates 3 per-cent. A. Hunter, xxxvi, 58.
- (Extra), Two Life Assurances. G. H. Ryan, xxiv, 305.
- (Net), For Clerks' Associations' Benefits, with and without allowance for withdrawal. T. G. Ackland, xxxiii, 184.
- (Office), Analysis of. G. S. Crisford, xxi, 312, xxv, 184, 387.
- In use in 1883. C. J. Harvey, xxiv, 176.
- To provide specified Bonus. H. W. Manly, xxiii, 233.
- Single and Annual, Whole-Life. H^M $3\frac{1}{4}$ per-cent. R. P. Hardy, xxxi, 81, 84.
- $\pi^1_{x:\overline{y}|t|}$, H^M 4 per-cent. J. Chatham, xxv, 439; A. W. Sunderland, xxvii, 81.
- Presbyterian Church of England Ministers' Widows' and Orphans' Fund. S. J. H. W. Allin, xxxix, 342.
- Probability that deviations from an average will exceed a named percentage. R. Campbell, ix, 232. Also logs of $\frac{b+x}{b}$ or $\frac{b}{b-x}$, ix, 223.
- Prussian Widows' Annuity Experience, 1776-1845 (Brune), Mortality Tables based on. S. Brown, iii, 29.
- Queensland Population Statistics. A. F. Burridge, xxiv, 333.
- Re-marriage. See Original Tables (2), Marriage.
- Reserves, Whole-Life Policy. Approximation to the effect of a reduction in the rate of interest in the calculation of. J. Stewart, xxxii, 268-271.
- Comparative, based on the assumption of a declining rate of interest from 4 per-cent (and a 3 per-cent) table. D. P. Fackler, xxxii, 274.
- Values for Benefits in Clerks' Associations, with and without allowance for withdrawal. T. G. Ackland, xxxiii, 185.
- For various classes of Assurance, H^M and Lapse Rates, 3 per-cent. A. Hunter, xxxvi, 59.
- See also Original Tables (2), Model Office.
- Reversions (Absolute). Table for facilitating the value of, H. Mountcastle, xv, 150.
- (Contingent). Northampton Table, 5 and 6 per-cent, allowing for office premiums, R. Tucker, v, 167.
- Charges upon, W. B. Paterson, xxxv, 255-6.
- Values of, H. E. Nightingale, xxx, 31, 36, 38, 46.
- Reversionary Annuities. T. B. Sprague, xiv, 432.
- Reversionary Life Interests, Values of, allowing for Office Premiums, Northampton Table, 5 and 6 per-cent. R. Tucker, v, 164.

ORIGINAL TABLES. (2.) *Arranged according to subject matter—continued.*

- Scotland, Census Returns. A. F. BurrIDGE, xxv, 83.
- Scottish Amicable Experience. W. Spens, x, 78.
- For the first ten Insurance Years. J. Chatham, xxix, 126, 127, 143-5.
- Scottish Banks, Mortality and Marriage Rates, and Statistics of Widows' Funds of the. A. Hewat and J. Chatham, xxxi, 439-467.
- Scottish Equitable Life Assurance Society. Healthy Female Lives. T. B. Sprague, xxxi, 227.
- Scottish Ten Offices' Experience. Comparison of, with Institute Experience. J. Chatham, xxix, 170, 171, 172.
- Secession, Experience in Friendly Societies. G. F. Hardy, xxvii, 313, 314, 315, 317; A. W. Watson, xxxv, 314-317.
- Experience in Hearts of Oak Benefit Society, 1884-91. R. P. Hardy, xxxi, 137-141.
- Rate of, in Industrial Assurance. C. H. E. Rea, xxxiv, 105.
- Effect of the rate of cessation when treated as a function of the rate of interest. Carlisle 3 per-cent. R. P. Hardy, xxxvi, 70.
- Select Lives. W. T. Thomson, i, 30*; J. A. Higham, i, 198; W. Spens, x, 78; G. King, xix, 398, xx, 233.
- Mortality Tables, Equivalent Age of H^M Life. T. B. Sprague, xxii, 406.
- H^M Reserves compared. Analysed, and H^M and $H^{M(5)}$ Reserves compared with Analysed. R. R. Tilt, xxxii, 17.
- Selection, Effect on Mortality Rates. T. B. Sprague, xv, 328, xxi, 229, xxii, 391; J. Stett, xxi, 163-5; R. Teece, xxii, 250; W. R. Dovey, xxiii, 285.
- Effect on Policy Values. J. Sorley, xxi, 192; T. B. Sprague, xxii, 410.
- Effect on Premiums. J. Sorley, xxi, 192; T. B. Sprague, xxii, 440.
- Effect on Sickness Rates in Friendly Societies. G. F. Hardy, xxvii, 292.
- Seventeen Offices' Experience. J. A. Higham, i, 198; W. S. B. Woolhouse, xi, 324.
- Exposed to Risk and Deaths (Town Males). W. Spens, x, 198.
- Sex of Children. The Influence of the Ages of the Parents on the. S. Brown, iii, 17; G. Hopf, iii, 259.
- Sexes. Proportions of Male and Female Births under different conditions. J. N. and Dr. C. J. Lewis, xl, 154.
- Sickness Benefits. Tables for Hearts of Oak Benefit Society, 1884-91. R. P. Hardy, xxxi, 115-136.
- Tables for Manchester Unity and Ancient Order of Foresters. G. F. Hardy, xxvii, 330-341.
- In Navy. T. B. Sprague, xxv, 54.
- Rates, Comparison of, in various Experiences. G. F. Hardy, xxvii, 290.
- Effect of Selection on. G. F. Hardy, xxvii, 292.
- Financial effect of changes in. G. F. Hardy, xxvii, 308-10, 330-41.
- Sickness, in Friendly Societies. A. W. Watson, xxxv, 289-299.
- Tables. Finlaison, Ratcliffe, and Neison compared. H. Tompkins, v, 10.
- Small-pox, in the Prussian, French, and Austrian Armies. Rate of attack and mortality. A. F. BurrIDGE, xxxvii, 281.
- Solvency in Life Assurance Companies, Tables for valuations for. G. H. Ryan, xxxii, 29.
- Values of Endowment Assurance for. E. Woods, xxxii, 59.
- South Australia, Population Statistics. A. F. BurrIDGE, xxiv, 333.
- Staff Pension Funds. *See* Original Tables (2), Pension Funds.
- Suicides in London, 1846-8. Arranged under sexes, ages, and causes of death. R. T. Jopling, i, 308.
- Surrender Values. J. R. Macfadyen, xvii, 406; G. S. Crisford, xxi, 313, 324, 331, 337, 348-73; F. W. Fulford, xxxv, 215, 219, 223; H. Moir, xxxvi, 33, 34.
- Compared with market price of policies. G. S. Crisford, xxi, 337.
- Survivorship, Probabilities of, and Assurances, Carlisle 3 per-cent. D. Chisholm, ii, 318.
- Annuities. J. Meikle, xi, 48; G. Davies, xv, 141.
- Survivorship Assurances, Risk Premiums for. A. W. Sunderland, xxvii, 86.
- Functions for Valuation of, &c. R. Todhunter, xxxv, 25-27.

ORIGINAL TABLES. (2.) *Arranged according to subject matter.***Survivorship Assurances**—*continued.*

— Tables showing total error in the sum of the values of assurances of 1, payable in the event of a young life dying first, second, and third of self and two older lives. J. Buchanan, xxxvii, 391.

— Comparative Single Premiums for. Calculated by the use of different methods of approximation. Three lives. Carlisle 3 per-cent. J. Buchanan, xxxvii, 400–401.

Survivorship Benefits. Tables for the calculation of. F. E. Colenso, xxxi, 354.

Temporary Assurances. Exposed to Risk and Deaths, graduated by means of Frequency Curves. British Offices' Experience, 1893. W. P. Elderton, xxxvii, 509.

— Premiums and Annuities, 0^M 3 per-cent. W. P. Elderton, xxxvii, 513.

— Select Premiums for. T. B. Sprague, xxii, 439–440.

Temporary Deductions, corresponding to ratings-up of 5 and 10 years. H^M $3\frac{1}{2}$ and 4 per-cent. A. W. Sunderland, xxix, 428–431.

— From sums assured on rated-up lives. G. F. Hardy, xxxii, 158, 159.

Text-Book Table, Graduation by Woolhouse's Formula. T. B. Sprague, xxix, 232–6.

Thirty American Offices' Experience for first ten Insurance Years. J. Chatham, xxix, 136, 137, 143–5.

Trinidad, Mortality Experience of Scottish Amicable Life Office in. J. Stott, xxi, 158, 160.

United Kingdom, the Colonies and Dependencies, Scope of the Censuses of. R. H. Hooker, xxxvi, 362.

United States. Requirements of the various States as regards Life Assurance Companies. J. Chisholm and S. Homans, xxxiii, 341.

Vaccination. Its influence in the small-pox epidemic at Sheffield, 1887–8. A. F. BurrIDGE, xxxvii, 274.

Valuations, By the Retrospective Method. Whole-Life Limited Payment and Endowment Assurances. 0^M and $0^{[M]}$ $2\frac{1}{2}$, $2\frac{3}{4}$, 3, $3\frac{1}{2}$, and 4 per-cent. F. Bell, xxxix, 64.

— By means of Select Tables. O. F. Diver, xl, 15, 40; T. G. Ackland, xl, 60.

Victoria, Comparison of Deaths and their Causes with those in England and Wales. A. F. BurrIDGE, xxix, 466–7.

— Population Statistics and Mortality Tables. A. F. BurrIDGE, xxiii, 309, xxiv, 333; E. M. Moors and W. R. Day, xxxvi, 156.

Wales, Census Returns. A. F. BurrIDGE, xxv, 83.

Warfare, Assurance Risks of. Various tables applicable to the assessment of. A. H. Smeë and T. G. Ackland, xxxiv, 368.

— Extra Premiums for Risks of. H. J. Rothery, xxviii, 471, 476.

— Premiums for Risks of. A. H. Smeë and T. G. Ackland, xxxiv, 381.

Weight, Average, for various heights. Dr. T. A. Foster, xxv, 251.

— Of Male Adults. T. B. Macaulay, xxiii, 62.

West Africa, Mortality of Assured Lives in. A. Levine, xxxiii, 516.

— Rates of Mortality among Government Officials. J. R. Hart, xxxiii, 308, 309.

West Indies, Mortality Experience of Scottish Amicable Life Office in. J. Stott, xxi, 157–168.

— Mortality Rates compared with Findaison's East Indies, and with other Tables. G. F. Hardy and H. J. Rothery, xxvii, 177–9.

— Population of, in 1877. J. Stott, xxi, 154.

Whole-Life Insurance. Single and annual premiums, with declining rates of interest. D. P. Fackler, xxxii, 274.

Whole-Term Policies, with limited number of premiums. Valuation Tables, H^M 3 per-cent. A. S. Hume and W. Stott, xxxiv, 397–412.

Widows' and Children's Pensions in connection with Staff Pension Funds. H. W. Manly and H. Foot, xxxviii, 111.

Widows' and Orphans' Pension Funds. S. J. H. W. Allin, xxxix, 342.

Widows' Fund. Experience of Norwegian General. O. Schjoll, xxviii, 94–98.

Widows, Statistics of Re-marriage of Miners'. T. Y. Strachan, xxvii, 48.

Withdrawals. See Original Tables (2), Discontinuances.

ORIGINAL TABLES. (2.) *Arranged according to subject matter—continued.*

Woolhouse's Indian Military Experience. (C. Jellicoe, i, 174.

Workmen's Compensation. Table showing Benefits allowed by the laws of various countries. J. Nicoll, xxxvi, 479.

Yeomanry and Volunteers (Assured Lives), engaged in the War in South Africa, 1899-1902. Mortality Tables. Tables for obtaining single and annual premiums. Annuities from yearly death rates. Single and annual premiums for different age groups, 3 per-cent. F. Schooling and E. A. Rusher, xxxvii, 574.

ORPHANS' PENSION FUNDS, Social conditions as affecting. S. J. H. W. Allin, xxxix, 337, 367.

OTTER (W. C.). On the value of contingent annuities and assurances with certain limitations (annuity during joint lives of x and y , and for n years longer if x lives so long, and assurance of x against y and n years longer), vii, 239.

— On the calculus of finite differences, and its application to problems in the doctrine of compound interest and annuities—certain (taken from the translation of A. Comte's *Cours de Philosophie Positive*, by Professor Gillespie), vii, 333, viii, 19.

— Demonstration of formulas for the premium for a term assurance on two joint lives, viii, 113.

OUTGO, Use of the word. T. B. Sprague, xxv, 366.

PAGDEN (L. K.). Rates of Mortality in West Africa, xxxiii, 359. Reference, A. Levine, xxxiii, 517.

PAID-UP POLICIES. T. B. Sprague, vii, 58, viii, 112; S. L. Laundry, viii, 58; J. R. Macfadyen, xv, 297; J. B. Cherriman, xxi, 298; G. S. Crisford, xxi, 321; J. E. Faulks, xxxiv, 570. *See also Surrender Value of Policies.*

PARADOXES, A Budget of. *See A. De Morgan.*

PARLIAMENTARY REPORTS. Select Committee (1853) on Assurance Associations, iv, 33. Editorial references, iv, 31, 131. Review of some of the Recommendations, F. Hendriks, iv, 324. On the First Committee on Insurance, F. Hendriks, iv, 58, 119, 300.

— The Select Committee on National Provident Insurance, xxvi, 480.

PARLIAMENTARY RETURNS. *See Board of Trade Returns.*

PASLEY (Lieut.-Gen. Sir C. W.). Plan for Simplifying and Improving the Measures, Weights, and Money of this Country, without materially altering the present standards, vi, 241.

PATERSON (W. B.). On the value of the option of withdrawal in Deferred Annuity Contracts (read before the Actuarial Society of Edinburgh), xxvi, 465.

— Contingent Reversions, Reversionary Life Interests and Life Interests in Possession, xxx, 536. References, S. G. Warner, xxxi, 288; Author, xxxv, 245.

— Increasing Reversionary Charges, xxxv, 245.

PATRIOTIC FUND. Note, and Correspondence as to the Valuation by the President and Council of the Institute of Actuaries, of the Funds under the control of the Royal Commissioners, xxxvi, 85-87, 400, xxxvii, 446, xxxix, 380. Valuation Reports of the Council of the Institute on the Liabilities and Assets, xxxvi, 402, xxxvii, 446, xxxviii, 379, xxxix, 383.

PATRIOTIC (RUSSIAN WAR) FUND. An Investigation into the Rates of Re-Marriage and Mortality amongst Widows in receipt of relief during the period 1854-1900, J. Burn and J. McDonald, xxxviii, 433.

PATTISON (W. P.). On the various methods pursued in the Distribution of Surplus among the Assured in a Life Assurance Company; with a comparison of the relative merits of such methods (Messenger Prize Essay, 1859), ix, 341.

PAYMENT INTO COURT (LIFE ASSURANCE COMPANIES) ACT, 1896. Reference, A. R. Barrand, xxxiii, 234.

PAYMENT TO TRUSTEES. *See Trustees.*

PEARSON (KARL). "The Chances of Death and other Studies in Evolution." *Review by G. F. Hardy*, xxxiii, 530.

- PEARSON (KARL) and BEETON (Miss M.).** Data for the Problem of Evolution in Man. A first study of the Inheritance of Longevity and the Selective Death Rate in Man, xxxv, 112.
- PEARSON (KARL), BEETON (Miss M.) and YULE (G. U.).** Data for the Problem of Evolution in Man. V. On the Correlation between Duration of Life and the number of Offspring, xxxv, 158.
- PEERAGE FAMILIES.** On the sexes of their children (quoted by S. Brown), M. T. Sadler, iii, 23.
- Rate of Mortality, A. H. Bailey and A. Day, ix, 305. Reference, C. Walford, xix, 191. Adjustment of the Male Mortality, G. W. Berridge, xii, 220. Reference, T. B. Sprague, xv, 331. Adjustment of the Female Mortality, Dr. T. N. Thiele, xvi, 43, 118.
- Their Marriage Statistics, A. Day, x, 181; Statistics of their Second Marriages, A. Day, xii, 185.
- Tables calculated from experience of, T. B. Sprague, xxi, 106.
- PELL (Prof. M. B.).** On the Distribution of Profits in Mutual Insurance Societies, reprinted from the *Sydney Morning Herald*, xiv, 382. Remarks (Editorial), xiv, 396.
- On the Institute of Actuaries' Life Tables, xxi, 137. References, T. B. Sprague, xxi, 452; R. Teece, xxii, 251.
- On the Rates of Mortality in New South Wales, and on the Construction of Mortality Tables from Census Returns, with a note on the Formation of Commutation Tables, xxi, 257. References, J. C. Hamington, xxi, 455; Dr. W. Robertson, xxii, 140; A. F. Burridge, xxiii, 322, xxiv, 339; E. M. Moors and W. R. Day, xxxvi, 152.
- PENSION FUNDS.** See H. W. Manly, xxxvi, 209, xxxvii, 193, xxxviii, 101; W. Sutton, xxxvii, 22.
- Valuation of, H. W. Manly and E. C. Thomas, xxxvi, 209; H. W. Manly, E. C. Thomas and J. N. Lewis, xxxvii, 193; H. W. Manly and H. Foot, xxxviii, 101.
- An enquiry into the Methods and General Principles to be Adopted in Calculating the Rates of Contribution or Percentage Deductions from Salary, J. McGowan, xxxvii, 15.
- (Staff). On the construction of Columns for obtaining the value of the Return on Death or Withdrawal of the total contributions (based on Salary) with compound interest at rate j per annum, discounted at rate i per annum, E. C. Thomas, xxxviii, 276.
- — On, G. King, xxxix, 129.
- — Formula for special Death Benefit. E. C. Thomas, xxxix, 206.
- — The Notation of Pension Fund Problems. G. J. Lidstone, xxxix, 208.
- (Widows' and Orphans'), S. J. H. W. Allin, xxxix, 337, 367.
- PENSIONS (Old Age),** G. F. Hardy, xxvii, 300; G. King, xxix, 375; R. P. Hardy, xxx, 79, 313; A. Hendriks, xxx, 284; H. W. Manly, xxxiv, 334; C. D. Higham, xxxv, 432.
- Canon Blackley's Scheme, A. Day, xxvi, 169; *Quarterly Review*, xxviii, 131; R. P. Hardy, xxix, 367; Sir E. W. Brabrook, xxx, 237.
- Tom Paine's Suggestions (1795), W. Sutton, xxix, 361.
- Right Hon. J. Chamberlain's Scheme, W. A. Hunter, xxix, 372, xxx, 315.
- C. Booth's Scheme, R. P. Hardy, xxx, 87; T. E. Young, xxx, 88; M. N. Adler, xxx, 92, 94; A. H. Bailey, xxx, 93; Sir E. W. Brabrook, xxx, 237.
- Extract from Report of Chief Registrar (Sir E. W. Brabrook) of Friendly Societies, 1891, xxx, 235.
- In New Zealand, F. W. Frankland, xxx, 314.
- W. Dowdeswell's Bill, 1773, J. Nicoll, xxxiv, 172.
- Lord Rothchild's Committee, J. Nicoll, xxxiv, 255.
- PERITONITIS.** On the Mortality of Males and Females from, Dr. W. Robertson, xix, 118.
- PESTILENCE,** Comparative Losses of Life from War and Pestilence, being Statement Made up from Official Returns for the use of the Board of Health, iv, 261.
- PETERSBURG PROBLEM** (in Probabilities), W. Orchard, ii, 185; A. De Morgan, x, 250; W. M. Makeham, xvi, 110.

PETTY (Sir W.). Extracts from his essay on the "Growth of the City of London", i, 231.

— Speculations as to the Number of People at the Resurrection, i, 238.

— Remarks on the Population of Ireland, i, 354, iii, 219.

PHILOSOPHY OF STATISTICS. See *Statistics*.

PHTHISIS, Dr. R. E. Thompson, xxiv, 443; F. Eve, xxvii, 156; Dr. T. G. Lyon, xxxi, 155.

— Among Persons Engaged in Various Occupations, H. W. Porter, ix, 12, 89, 149.

— Deaths from, in Victoria (1876-89), A. F. BurrIDGE, xxiii, 316.

— In the Union Mutual Insurance Company (Portland, Maine), Dr. T. A. Foster, xxv, 251.

— (Pulmonalis) Modern View of Causes, Nature and Prevention, Dr. J. S. Bristowe, xxvi, 220.

— "The Declension of" (Sir Hugh Beever). *Review* by Dr. A. Newsholme, xxxiv, 584.

See also *Consumption*.

PIERSON (I. C.). Report on the arrangement of Commutation Columns, xxxiii, 31.

— The Decennary of the Actuarial Society of America, xxxv, 130.

PILOTS. On the Extra Risk attaching to their occupation, T. B. Sprague, xix, 212.

PIMENTEL (H.). Article communicating M. Charlon's Method of obtaining De Moivre's Formula in the simplest terms, xv, 141.

— An account of a recent change in the Law relating to Life Insurance in the Netherlands, xix, 210.

PINCKARD (G. H.). On the practice and experience of the Clerical, Medical and General Life Assurance Society, chiefly with reference to Invalid Lives, i, 273.

PITCAIRN (D.). On C. J. Bunyon's scheme for the Liquidation of an Insolvent Life Office, xv, 385.

— Some observations on mortgages, xix, 369.

"**POLE STAR** Life Insurance Company of Stockholm, its Operations during the first fifteen years of its Existence" (Otto Samson). *Review* by T. B. Sprague, xxvi, 471.

POLICIES (Life Assurance), Loans on, S. Brown, vii, 250; A. G. Mackenzie, xxix, 201.

— On the Casualties to which they are liable, C. Jellicoe, viii, 241.

— Grant of Settlement Policies under "The Married Women's Property Acts, 1870 and 1882", T. B. Sprague, xxiv, 77.

— Application of the principle of Non-Forfeiture to, T. B. Sprague, xxiv, 359.

— Assignment of, R. Teece, xxv, 360; C. D. Higham, xxvi, 325; W. K. Lemon, xxix, 385; A. H. Bailey, xxix, 408; T. B. Sprague, xxix, 414; B. Newbatt, xxix, 416; A. R. Barrand, xxxiii, 208. In the Colonies and United States (Editorial), xxvii, 420.

— Rights of Reversioner as to, when effected to secure advances, T. B. Sprague, xxvii, 121.

— Laws affecting, W. K. Lemon, xxix, 381.

— Whole World, H. C. Thiselton, xxxi, 34.

— Indisputability of, H. C. Thiselton, xxxi, 37. Reference, A. H. Bailey, xxxi, 59.

— Methods of treating Duplicate and Revived Policies in a Mortality Investigation, T. B. Sprague, xxxi, 207.

— On Lost Policies, Certified Copy Policies, Certificates of title, Possession of a Policy, Notice, Bankruptcy, and some other practical considerations with regard to the titles to Policies, T. B. Sprague, xxxiii, 373.

— Tables of Experience based on, G. F. Hardy, xxiii, 1; G. H. Ryan, xxvi, 249, xxviii, 220; J. Chatham, xxix, 82.

See also *Legislation*.

POLICY, Form of, in use in 1754, v, 349.

— In use in 1721, London Assurance Corporation, xxii, 248.

— Sinking Fund Assurance, J. E. Faulks, xxxiv, 571.

— Life Lines, J. Meikle, xxiii, 385.

— And its Conditions, B. Newbatt, xxxi, 5.

POLICY RESERVES, British Offices' Life Tables, 1893, xxxvii, 131.

POLICY VALUES. See *Valuation of Life Policies*.

POLICY YEAR METHOD of arranging Observations for Mortality Experience, G. H. Ryan, xxvi, 258, xxviii, 221; A. H. Bailey, xxvi, 268; H. W. Manly, xxvi, 272; J. Chatham, xxix, 91; W. J. H. Whittall, xxxi, 161. See also **Mortality** (4).

"POPULAR TABLES" (C. A. M. Willich). *Review*, iii, 311; Ditto, 2nd Edition, viii, 347.

POPULATION, Effect of Density of, on the Rates of Mortality and Sickness in Friendly Societies, A. W. Watson, xxxv, 271.

POPULATION OF ENGLAND, During the last 100 years. On the Law of Increase, T. R. Edmunds, ii, 57. See also **Sir J. W. Lubbock**, v, 288.

POPULATION TABLES:—

United States, S. Brown, xiii, 272; Paris, 1817 (Fourier's), A. De Morgan, xiv, 89; New South Wales, M. B. Pell, xxi, 270; A. F. BurrIDGE, xxiv, 346, 347; E. M. Moors and W. R. Day, xxxvi, 159; Queensland, A. F. BurrIDGE, xxiv, 343, 347; South Australia, A. F. BurrIDGE, xxiv, 344; Victoria, A. F. BurrIDGE, xxiv, 346, 347; E. M. Moors and W. R. Day, xxxvi, 159; England and Wales, 1801-81, A. F. BurrIDGE, xxv, 96; 1801-1901, G. H. Ryan, xxxvi, 357; England and Wales, Scotland, and Ireland, showing Deaths from Cancer, G. King and Dr. A. Newsholme, xxxvi, 140-142; The World (estimated), A. F. BurrIDGE, xxv, 101; London, 1801-81, A. F. BurrIDGE, xxv, 107; Madras, 1871-81, G. F. Hardy, xxv, 226; West Indies, G. F. Hardy and H. J. Rothery, xxvii, 162; Europe, G. H. Ryan, xxxvi, 359; Ontario, M. D. Grant, xl, 135.

See also **Censuses and Census Returns**.

PORTER (G. R.). "Accumulation of Capital by the different Classes of Society." *Review*, ii, 299.

PORTER (Mrs. G. R.). "Rational Arithmetic." *Review*, iii, 264.

PORTER (H. W.). On the French Life Assurance Companies, i, 91*.

— On some points connected with the Education of an Actuary, iv, 168.

— On Medical Statistics of Life Assurance Companies (Scottish Widows' Fund and Standard), iv, 256.

— Suggestions for a better means of making provision for the wives and families of persons engaged in the business of Life Assurance, v, 72.

— On some considerations suggested by the Annual Reports of the Registrar-General: being an enquiry into the Question as to how far the inordinate mortality in this Country, exhibited by those Reports, is controllable by Human Agency, ix, 12, 89, 149.

— On Miss Florence Nightingale's notes on Nursing, ix, 242.

— On A. G. Finlaison's Report and Observations on the Mortality of the Government Life Annuitants, ix, 277. Remarks, A. H. Bailey, ix, 357. Mr. Porter's Reply, x, 31.

— On B. Gompertz's papers, ix, 296.

— On the influence of Railway Travelling on Public Health, xi, 152.

— Results obtained by the use of various formulas for the apportionment of a Fund between the Life Tenant and the Reversioner, xvi, 285. Reference, T. B. Sprague, xviii, 78.

— Solutions of Examination Questions, i, 123*, ii, 197.

— **Reviews**:—

— — Dr. W. Farr's Letter appended to the Registrar-General's 12th Annual Report, iv, 266.

— — "Hygiene, or Handbook of Health" (H. W. Lobb), vi, 110.

— "Essay on Life Assurance: being a popular Exposition of the subject, and a plea for its more general adoption." *Review*, ix, 58.

POSSESSION OF POLICY (Life Assurance), On rights conferred by, T. B. Sprague, xxxiii, 380.

"POST MAGAZINE", Extract from:—

— The Treatment of the Discontinuances in the British Offices' Experience, 1863-1893, J. Chatham, xxxi, 312.

PCST OBITS, Remarks on A. Scratchley's work, "An Actuary", vii, 52; "G", vii, 56; H. A. Smith, vii, 111; T. B. Sprague, xiv, 419, 425.

PRACTICE OF LIFE OFFICES.

- As regards approximating to Three-life Annuities, G. F. Hardy, xxiii, 274.
- As regards Medical Reports, J. Chisholm, xxv, 411.
- Changes therein during the last 50 years, D. Deuchar, xxviii, 453.
- As regards Female Lives, G. H. Ryan, xxix, 75.
- In America, W. A. Hutcheson, xxxvii, 95.

See also H. C. Thiselton, xxxi, 28.

PREMIUM LOADINGS, H. A. Smith, xx, 145; G. S. Crisford, xxv, 184, 387.

PREMIUM RATES, Tables of:—

- (1852) for life assurances and annuities charged by four Austrian Companies, iii, 126.
- To assure a sum payable on second marriage of a Widower. English Life Table, 3 per-cent. A. Day, x, 196.
- Half-yearly and Quarterly for any rate of mortality, 3 per-cent, S. L. Laundry, xi, 235.
- Single and Annual, according to the Equitable Experience (Table A) at 3 per-cent, W. Morgan, xii, 238.
- For Children's Endowments, 3, $3\frac{1}{2}$, and 4 per-cent, W. A. Bowser, xvii, 36.
- Contingent or Survivorship (4 per-cent), T. B. Sprague (H^M), xxii, 397; J. Chatham (H^M), xxv, 439; A. W. Sunderland (H^M) modified and Government Annuity Female Experience), xxvi, 58, xxvii, 81.
- For Endowment Assurances (H^M 3 per-cent, H. A. Smith, xxii, 143; (H^M 2 $\frac{1}{2}$ per-cent), J. McDonald, xxxii, 448; On two lives of equal age (H^M 4 per-cent), G. J. Lidstone, xxxiii, 356; (H^M Text-Book Graduation 3 per-cent), A. S. Hume and W. Stott, xxxvi, 393.
- For Select Lives (H^M 4 per-cent), T. B. Sprague; Non-Profit, xxii, 396; Net Premiums, xxii, 408; Term Premiums, xxii, 439; Reduced Premiums for first five years, xxii, 440.
- Single and Annual Whole-Life (H^M 3 $\frac{3}{4}$ per-cent), R. P. Hardy, xxxi, 84.
- Model Rates: Office Premiums (H^M 4 per-cent); Office Premiums (H^M 4 per-cent), H. W. Andras, xxxii, 332; Office Premiums (H^M 3 $\frac{3}{4}$ per-cent), H. W. Andras, xxxii, 344.
- Average Maximum and Minimum Rates charged by Offices distributing Uniform and Compound Reversionary Bonuses, H. W. Andras, xxxii, 334.
- For Sinking Fund Assurances, on various bases, J. E. Faulks, xxxiv, 566.
- For various classes of Assurance; (H^M and Lapse rates, 3 per-cent), A. Hunter, xxxvi, 58.
- For Whole-Life Non-Participating Assurances (O^{NM} 3 per-cent), xxxviii, 352.

See also **Original Tables (2, Premiums.**

PREMIUMS (Annual). On a new expression for $\frac{\Lambda(1-r)}{1-\Lambda}$, P. Gray, ii, 95. On the

significance of the expression $\frac{1}{1-a} - d$, P. Gray, x, 117. *See also* x, 238.

- Extra, for going abroad, C. Jellicoe, ii, 166.
- For Mariners' Lives, E. H. Galsworthy, iv, 88; G. H. Ryan, xxvi, 413.
- For Assurances payable at the Instant of Death, Carlisle 3 per-cent, D. Chisholm, iv, 89.
- Required when Interest is allowed upon them, C. Jellicoe, v, 318.
- To provide certain bonuses to the Assured, T. B. Sprague, vii, 61; R. Tucker, ix, 245.
- On the Incongruity between the Rates charged and Benefits, H. A. Smith, viii, 167. Reference, R. Tucker, ix, 245.
- Increasing and decreasing Scales, S. L. Laundry, x, 286.
- (**Half-yearly and Quarterly**). On a Method of obtaining them from the Annual Premium, S. L. Laundry, xi, 232. On the valuation of policies subject to, W. M. Makeham, xii, 65; T. B. Sprague and G. King, xxiii, 256.
- ($\frac{1}{m}$ yearly), the formulas for, M. N. Adler, xii, 21; Dr. A. Wiegand, xii, 54; S. L. Laundry, xii, 55.
- Returnable at death or withdrawal, W. M. Makeham, xii, 232.
- Method of Loading required for the assurance of Sums at Death, etc., W. M. Makeham, xv, 354.

PREMIUMS *continued.*

- On the effect of Selection upon Adjustment of Premiums, J. A. Higham, xx, 1.
- For the Insurance of Recently Selected Lives, T. B. Sprague, xx, 95.
- **Contingent or Survivorship**, P. Gray, xxi, 67; T. B. Sprague, xxii, 397; J. Chatham, xxv, 139; A. W. Sunderland, xxvi, 58, xxvii, 81.
- On their calculation by the aid of Gompertz's hypothesis, W. M. Makeham, ix, 361.
- Calculation of, when Makeham's Law holds, A. S. Hume and W. Stott, xxxix, 379.
- For Extra Risks, T. B. Sprague, xxi, 77; G. H. Ryan, xxiv, 19; F. W. White and W. J. H. Whittall, xxiv, 390. In respect of Two-life Assurances, G. H. Ryan, xxiv, 305; Persons engaged in the Liquor Trade, xxxiii, 260; On Double Endowment Assurances, A. Levine, xxxiv, 515.
- Method of Interpolating the Value of, when these are given only for certain intervals of age, D. Carment, xxi, 213.
- For Issue Assurances, T. B. Sprague, xxi, 406, xxviii, 350.
- For Europeans in India (Madras Equitable Society), xxxiii, 53.
- Constant Factors in relation to Life Annuity Values and Assurance Premiums, D. J. McG. McKenzie, xxiii, 187.
- With reference to a certain Method of distributing Surplus, H. W. Manly, xxiii, 233; H. J. Rothery, xxx, 131.
- Average, C. J. Harvey, xxiv, 296.
- Payable Fractionally throughout the Year, G. King, xxiv, 418.
- For Complex Benefits, calculated by means of Formulas of Approximate Summation, G. King, xxvi, 276.
- **Surplus**, Bonuses arising from, A. W. Sunderland, xxvi, 357, xxviii, 257.
- **Risk**, for Survivorship Assurances, A. W. Sunderland, xxvii, 81.
- **Survivorship**, Calculation of, A. W. Sunderland, xxvii, 509.
- For West Indian Lives, G. F. Hardy and H. J. Rothery, xxvii, 181.
- **Returnable**, G. J. Lidstone, xxviii, 250.
- For War Risks, A. H. Snice and T. G. Ackland, xxviii, 463, xxxiv, 358; F. Schooling and E. A. Rusher, xxxvii, 615.
- **Deferred**, On Fines for Deferred Assurances with, H. J. Rothery, xxviii, 483.
- For Female Lives, G. H. Ryan, xxix, 71; (Editorial), xxix, 75.
- For Lives with Family History of Consumption, H. W. Manly, xxx, 118.
- For Family Annuities, G. King, xxx, 291.
- Modes of Payment of, and various Forms of Assurance, B. Newbatt, xxxi, 9.
- On the Valuation of, J. Chatham, xxxi, 79, 154; T. G. C. Browne, xxxi, 154.
- Reduced in Anticipation of Future Bonuses; Notes on the Use of Scales of, G. F. Hardy, xxxi, 261.
- For Endowment Assurances on Two Joint Lives, G. J. Lidstone, xxxiii, 354.
- Discounted by Application of Bonus, H. Moir, xxxvi, 4.
- The Effect of Using the Lapse Element in Calculating, A. Hunter, xxxvi, 51.
- For Assurance against Employers' Liability, J. Nicoll, xxxvi, 540.
- For Assurance against Accidents in various Trades and Occupations in Germany and France, J. Nicoll, xxxvi, 542, 543.

See also Extra Premiums.

PRESBYTERIAN CHURCH OF ENGLAND Ministers', Widows' and Orphans' Fund, S. J. H. W. Allin, xxxix, 339.

PRESS EXTRACTS.

See Athenæum; Calcutta Review; Chronicle (New York); Edinburgh Review; Glasgow Medical Journal; Harper's Monthly; Insurance Monitor (New York); Insurance Record; Insurance Times (New York); Le Moniteur des Assurances; Light Science for Leisure Hours; Monthly Insurance Journal; Nature; Newcastle Daily Chronicle; Quarterly Review; Review; Revue des Assurances; Rundschau der Versicherungen; Scotsman; Spectator (New York); Sydney Morning Herald; The Times.

PRESS (INSURANCE). On its position in Relation to Insurance Offices and Insurance Interests, C. Wallford, xxxiii, 18.

PRESUMPTION OF DEATH, W. K. Lemon, xxix, 404; A. Hendriks, xxix, 409; A. G. McKenzie, xxix, 414.

- PREVIOUS PROPOSALS**, Suppression of Material Information concerning. *See* **Legal Decisions**: London Assurance Corporation v. Mansell.
- PRICE (Dr. R.)**. On Life Annuities, F. Hendriks, i, 2.
- Incident in his Life. Extract from Memoir of him, W. Morgan, i, 86.
- Reference to his views as to the value of Annuities payable by instalments, Dr. T. Young, vii, 29.
- His method of Constructing the Northampton Mortality Table, W. Sutton, xviii, 107.
- "PRINCIPLES AND METHODS** adopted in the Compilation of the Data, the Graduation of the Experience, and the Construction of Deduced Tables. (British Offices' Life Tables, 1893. Assured Lives and Annuitants)." *Review* by R. Todhunter, xxxviii, 356.
- PRIZES**. M. N. Adler's, S. Brown's, J. Chisholm's, Messenger's, T. B. Sprague's. *See* **Institute of Actuaries**.
- PROBABILITIES**, Theory of. *See* **F. G. P. Neison, Sr.**, i, 368; **P. Hardy**, ii, 151, 259; **Sir J. W. Lubbock**, v, 197; **W. A. Guy**, v, 315; **S. Brown**, vi, 134; **Dr. T. Young**, vi, 287; **R. Campbell**, viii, 316, ix, 216; **Sir J. F. W. Herschel**, xv, 179; **W. Lazarus**, xv, 245; **W. Sutton**, xv, 452, xvi, 438; **W. S. B. Woolhouse**, xvii, 43.
- Letters on the Theory of Probabilities as applied to Moral and Political Sciences (A. Quetelet), *Review*, i, 362.
- On the Petersburg Problem, W. Orchard, ii, 185; A. De Morgan, x, 250; W. M. Makeham, xvi, 410.
- On the results to be looked for on tossing a dynamically true Coin, W. J. Reynolds, iv, 65. Editorial note, iii, 326.
- A Problem in, Bishop Terrot, v, 1.
- Applications of the elementary Principles to questions relating to the clearing of the London Banks, Sir J. W. Lubbock, ix, 143.
- On the Final law of the Sums of Drawings, A. De Morgan, xiv, 175.
- Derived from observation on their computation and adjustment, W. Lazarus, xx, 410.
- W. S. B. Woolhouse, Prof. A. Cayley, and T. B. Sprague on the Tradition Question. ("A says that B says that a certain event took place; required the probability that the event did take place, p_1 and p_2 being A's and B's respective probabilities of speaking the truth"), xxi, 204; A. Macfarlane, xxii, 356.
- New Formulas for calculation of probabilities with regard to invalidity or permanent incapacity for work, D. J. A. Samot, xxi, 288.
- On the Adjustment of Probabilities of Marriage or Death, T. B. Sprague, xxi, 445.
- The true measure of the Probabilities of Survivorship between two Lives, T. G. Ackland, xxvii, 157.
- The Average Magnitude of Deviations from Mean Results, G. F. Hardy, xxvii, 214.
- A Theory of Inverse, W. M. Makeham, xxix, 242, 441.
- A Problem in (the *a posteriori* probabilities of certain hypotheses as to the drawing of balls from an urn), W. M. Makeham, xxix, 475.
- On some Fundamental Principles in the Theory of (G. Chrystal). *Review* by G. F. Hardy, xxxi, 315.
- "Are Events resulting from the exercise of the Human Will suitable for the Deduction of Serviceable Probabilities?" (Correspondence between H. Adan and T. E. Young), xxxiii, 523.
- **Of Issue of a Marriage** hitherto Childless, T. B. Sprague, xxii, 117, xxv, 160.
- — **Of a Marriage** entered into by a man above 40, T. B. Sprague, xxii, 359.
- — **Of a Marriage** entered into at any age, T. B. Sprague, xxv, 160, xxvii, 195.
- **Of Survivorship** (Complex), G. King, xxvi, 276. *See also* **Integration and Summation** (Approximate).
- "PROBABILITY AND CHANCE, AND THEIR CONNECTION WITH THE BUSINESS OF INSURANCE"** (T. B. Sprague). *Review* by G. F. Hardy, xxxi, 315.
- PROBABILITY** of Survivorship, P. Gray, i, 137; D. Chisholm, ii, 318.
- PROBABLE ERRORS**. *See* **Theory of Errors**.

PROBLEMS in the Valuation of Staff Pension Funds, demonstrated and explained with illustrative Tables, H. W. Manly and E. C. Thomas, xxxvi, 217. Reference, H. W. Manly, xxxvii, 193.

— — In the Valuation of Widows' and Children's Pensions in connection with Staff Pension Funds, demonstrated and explained, H. W. Manly and H. Foot, xxxviii, 116.

See also Notes and Queries and Probabilities.

PROCLAIMED CLANS (North-West Provinces, 1876-1882), Mortality among, G. F. Hardy, xxv, 223.

PROCTOR (R. A.) The Influence of Marriage on the Death Rate, being observations on Dr. J. Stark's conclusions extracted from "Light Science for Leisure Hours", xxiii, 41.

PRODUCT OF TWO FACTORS, On a Method of finding it, by means of the Addition and Subtraction of Natural Numbers, S. L. Laundry, vi, 121.

PROFESSION (Status of a), By what means is it to be improved? C. Jellicoe, vi, 72.

PROFIT IN LIFE ASSURANCE FUND. Capital or Interest? C. Jellicoe, vi, 101.

— On the Progress of, T. J. Searle, xxx, 493.

— Summary of Various Methods of obtaining, J. Chatham, xxxii, 405.

— Prospective and retrospective Method of obtaining, J. Chatham, xxxii, 412.

— Sources of, J. Chatham, xxxii, 439.

PROFITS (Division of). *See Bonus and Bonuses and Surplus.*

PROGRESSIVE MORTALITY, Its application to Valuations, J. Meikle, iii, 277.

PROGRESS OF LIFE ASSURANCE, S. Brown, ii, 352, vi, 160; T. B. Sprague, xxv, 65; M. Besso, xxvi, 426; D. Deuchar, xxviii, 442. *See also Life Assurance.*

PROTECTION OF POLICIES AGAINST CREDITORS, In Australia and New Zealand, R. Teece, xxv, 363; in Cape Colony, A. W. Tarn, xxxiv, 549.

PROVIDENT LIFE AND TRUST COMPANY of Philadelphia, Mortality Experience of, T. B. Sprague, xxvi, 316; G. H. Ryan, xxviii, 221.

"**PRUDENT MAN'S ALMANAC, 1852**" (W. Bridges). *Review*, iii, 183.

PRUSSIAN CLERGY, Mortality among, D. A. Bumsted, xxiii, 35.

PUBLICANS, Mortality among, J. Stott, xx, 35; S. C. Thomson, xxi, 178. Associated Scottish Life Offices, xxxiii, 245, 252. *See also Innkeepers and Liquor Trade.*

"**PUBLIC FUNDS**" (C. A. M. Willich). *Review*, iii, 341.

PUBLIC FUNDS as an investment for Insurance Companies, S. Brown, vii, 243.

PUBLIC HEALTH, The Influence of Railway Travelling on, H. W. Porter, xi, 152.

— On the influence of occupation upon, F. G. P. Nelson, Jr., xvii, 95.

— Vaccination and the Act of 1898, A. F. BurrIDGE, xxxvii, 245.

— Vaccination and the Mortality from Small-pox in London, A. H. Bailey, xxxvii, 312.

"**PUBLIC HEALTH ACT**. Summary of an Experience on Disease, and Comparative Rates of Mortality" (W. Lee). *Review*, ii, 97.

PUBLIC HEALTH ACTS, 1872-75, Resist of, upon Mortality in Early Life, N. A. Humphreys, xxvii, 493.

PURE PREMIUM METHOD OF VALUATION, A. H. Bailey, xxi, 115. Reference, T. B. Sprague, xxi, 435.

— On Expenses and Selection as affecting the, J. Sorley, xxi, 192.

— As affected by recent tendencies and developments, S. G. Warner, xxxvii, 57.

See also Net Premium Method and Valuation of Life Policies (1).

PURE PREMIUM POLICY-VALUES, Changes in, consequent upon variations in the Rate of Interest or the Rate of Mortality, or upon the Introduction of the Rate of Discontinuance, G. J. Lidstone, xxxix, 209, 247.

QUADRATURE FORMULÆ, The use of, for the Calculation of Survivorship Benefits, J. Buchanan, xxxvii, 384.

QUADRATURES, On the Formula for, W. S. B. Woolhouse, xiii, 119.

"**QUARTERLY REVIEW**", Extract from:—

— Friendly Societies, xxviii, 112.

QUARTER SQUARES, S. L. Laundry, vi, 121, 234, ix, 112.

— The Method of (extract from *Nature*), J. W. L. Glaisher, xxviii, 227; G. C. Foster, xxviii, 235.

QUEENSLAND, Population Tables, A. F. BurrIDGE, xxiv, 343.

See also Colonial Intelligence.

- QUETELET (A.).** Letters on the Theory of Probabilities as applied to the Moral and Political Sciences, O. G. Downes's Translation. *Review*, i, 362; *Review* by Sir J. F. W. Herschel, xv, 179. Quoted by W. S. B. Woolhouse, xvii, 191.
- On the Calculation of Tables of Mortality. Translated by S. Brown, iv, 27.
- Address to the Statistical Congress, Brussels (1853), iv, 101.
- Tables as to the proportion of Marriages at different ages of the sexes. Reference, S. Brown, vii, 188.
- QUINTISECTION.** F. Maurice, xiv, 1; H. Briggs, xiv, 73. *See also* **Interpolation.**
- RAILWAY DEBENTURE STOCKS.** Average Rate of Interest yielded by, 1870–1897 (Diagram), J. Burn xxxiv, 488.
- RAILWAY TRAVELLING.** Its influence on health, H. W. Porter, xi, 152.
- RAISIN (A. H.) and BAKER (H. J.).** "British Offices' Life Tables, 1893. Select Tables, Participating and Non-Participating Assurances." *Review* (Editorial), xxxix, 123.
- RATCLIFFE (H.).** Manchester Unity of Oddfellows, Mortality and Sickness Tables. References, H. Tompkins, iii, 11, v, 9; T. R. Edmonds, v, 127; S. Brown, xi, 343; F. W. Frankland, xxi, 389; G. F. Hardy, xxvii, 287; A. W. Watson, xxxv, 285.
- RATE OF DISCONTINUANCE.** *See* **Discontinuances.**
- RATE OF INTEREST.** *See* **Interest.**
- "RATE OF MORTALITY among persons of Intemperate Habits"** (F. G. P. Neison, Sr.), *Review*, ii, 96.
- RATE OF MORTALITY.** *See* **Mortality.**
- RATE OF WITHDRAWAL.** *See* **Discontinuances and Withdrawal.**
- RATED-UP LIVES.** On a Method of Computing the Temporary Deductions to be made from the Sums Assured, upon Rated-up Lives, in lieu of Extra Premium, G. F. Hardy, xxxii, 153. *See also* **Extra Premiums.**
- RATES AND RENT CHARGES,** Loans on, A. G. Mackenzie, xxix, 201.
- RATHBONE (T. W.).** Notice of his objections to Decimal Coinage, C. Jellicoe, v, 293.
- "RATIONAL ARITHMETIC"** (Mrs. G. R. Porter), *Review*, iii, 264.
- REA (C. H. E.).** Some Observations on Industrial Assurance, xxxiv, 105. Reference, T. G. Ackland and J. Bacon, xxxviii, 548.
- RE-ASSURANCE OF RISKS.** On the principles which should regulate it, C. Jellicoe, viii, 96.
- Some Reasons for thinking the system of Reassurance undesirable, B. Newbatt, xii, 1.
- RE-ASSURANCE METHOD OF VALUATION,** R. Tucker, x, 312; T. B. Sprague, xi, 90, xvi, 234*n*, xxii, 51; J. A. Higham, xxii, 43; A. H. Bailey, xxii, 45; A. Baden, xxii, 50; G. S. Crisford, xxv, 388; F. B. Wyatt, xxx, 154.
- RE-ASSURANCE POLICIES,** Stamp Duty on (if under Hand), E. Colquhoun, xxviii, 166; Stamp Duty on (if under Seal), (Editorial), xxviii, 167.
- REBATE SYSTEM,** In America, A. W. Tarn, xxxiv, 534.
- RÉBOUL (E.).** New method of calculating the value of an assurance to the Survivor nominated (*i.e.*, a Survivorship Assurance), ix, 1.
- "RECIPROCALLS"** (Lieut.-Col. W. H. Oakes), *Review*, xii, 362.
- RECONSTRUCTION OF LIFE OFFICES,** A. Day, xxvi, 169; G. H. Ryan, xxxii, 33.
- REDEMPTION,** Option of, in Sale of Reversions, T. B. Sprague, xxvii, 113; A. Day, xxvii, 115; D. A. Bumsted, xxvii, 118; H. E. Nightingale, xxx, 25.
- REDUCED PREMIUMS.** *See* **Premiums.**
- REGISTRAR-GENERAL.** Correspondence with, as to the British Census of 1901, xxxvii, 317–319.
- REGISTRAR-GENERAL'S REPORTS.** Dr. W. Farr's letter appended to the 12th Annual Report. *Review*, H. W. Porter, iv, 266.
- Inquiry as to how far the inordinate Mortality in this Country, exhibited by these Reports, is Controllable by Human Agency, H. W. Porter, ix, 12, 89, 149.
- REGISTRATION ACT, 1836** (Births, Deaths and Marriages in England), Reference, A. F. Burridge, xxv, 87.

REGISTRATION OF DEEDS, Affecting Land in Scotland, A. G. Donald, xxxix, 255.

REGISTRATION OF TITLE TO LAND, Some aspects of, J. R. Hart, xl, 216.

REGISTRY OF DECLINED LIVES in Canada and America, G. H. Ryan, xxxii, 43.

REID (J.), Abstract of his Paper on the Progressive Rates of Mortality as occurring in all ages and on Certain Deviations; also on A. Buchanan's "Physiological Law of Mortality", vi, 129.

RE-MARRIAGE. See **Marriage**.

RENEWAL OF LEASEHOLDS for lives or years that have been the subject of settlement, C. J. Bunyon, iii, 289; E. Ryley, iv, 367.

REPORTS OF COMPANIES. See **Bonus (or Investigation) Reports**.

RESERVE, Made by Life Offices, C. Jellicoe, v, 51; G. King, xix, 381, xx, 233.
— The Relation which should obtain between it and the amount assured, C. Jellicoe, v, 100.

— (**Claim Acceleration**.) See **Claim Acceleration Reserve**.

RESERVE VALUES of Discounted Bonus Policies, H. Moir, xxxvi, 23; G. King, xxxvi, 12.

RESERVES and Distribution of Bonus, B. Newbatt, xxxi, 16.

RESERVES (Policy). See **Valuation of Life Policies (2)**.

RETROSPECTIVE METHOD OF VALUATION, J. Meikle, iii, 277, xi, 245; W. M. Makeham, xv, 451; F. Bell, xxxix, 17.

RETURNABLE PREMIUMS. See **Premiums**.

REVERSIONARY ANNUITIES (Payable Half-Yearly or Quarterly), H. Ivory, iv, 298; Dr. T. Young, vii, 22; T. Carr, vii, 109; W. S. B. Woolhouse, xv, 113; T. B. Sprague, xv, 126; W. Evans, xix, 12.

— On the single and annual premiums for, to A after B, provided B die within n years, R. Tucker, v, 255; H. A. Smith, v, 352.

— By Annual Premiums returnable, P. Gray, xxi, 67.

— Four Formulas for the Valuation of an Annuity on a Compound Status, G. King, xxii, 296.

— Value of an Annuity to y after x without issue, T. B. Sprague, xxiv, 329.

— Value of the option of Second Nomination in, G. F. Hardy, xxv, 134.

— Alternative Formulas for calculation of, where the Life Tenant and Reversioner are subject to different Rates of Mortality, G. King, xxvi, 284. Reference, T. G. Ackland, xxvi, 293.

REVERSIONARY INTERESTS, Mortgages of, H. Godefroi, xxv, 55.

— Contingent on survival of the Reversioner, S. G. Warner, xxxi, 280.

REVERSIONARY LIFE INTERESTS AND REVERSIONS (Absolute and Contingent), Market value of, E. Sang, i, 18*, 151, 287; C. Jellicoe, ii, 159, viii, 310; C. G. Shaw, ii, 295; R. Tucker, v, 162, 239; T. B. Sprague, xiv, 419, xxvii, 121; J. R. Macfadyen, xvii, 381, xx, 385; C. J. Bunyon, xviii, 10; T. G. C. Browne, xxvii, 117.

— On the value of, R. Tucker, v, 162; "Juvenis", xii, 182; "T. M.", xii, 301; "Fellow of the Institute", xii, 301.

— As Investments for Life Offices, S. Brown, vii, 219; A. H. Bailey, x, 146; C. R. V. Coutts, xl, 317.

— As Marketable Securities, C. Jellicoe, ii, 163; G. Davies, xv, 138; T. B. Sprague, xiv, 117, xv, 131, xvii, 229.

— Problems in, T. B. Sprague, xiv, 145.

— On their Valuation, H. Mountcastle, xv, 148; C. J. Bunyon, xviii, 11; T. B. Sprague, xxvii, 107, xxix, 510; A. W. Sunderland, xxvii, 220; H. E. Nightingale, xxx, 9; W. B. Paterson, xxx, 536; S. G. Warner, xxxi, 280.

— Dependent on an Under-Average Life. See **Dalchosnie Disentail Case**, xxiii, 77.

— Value of a Reversion on Death of x without issue, T. B. Sprague, xxiv, 328.

— Benefit of Survivorship in, G. King, xxvi, 288; D. A. Bumsted, xxvi, 297; G. H. Ryan, xxvi, 298; A. W. Sunderland, xxvi, 299; F. E. Colenso, xxviii, 381.

— Option of Redemption in Sale of, T. B. Sprague, xxvii, 113; A. Day, xxvii, 115; D. A. Bumsted, xxvii, 118; H. E. Nightingale, xxx, 25.

REVERSIONARY LIFE INTERESTS AND REVERSIONS—*continued*.

- In the Accounts of a Life Office, How they should be dealt with, G. King, xxvii, 120; T. B. Sprague, xxvii, 122.
- A Case, Counsel's Opinion and Court order, J. R. Hart, xxxii, 56.
- On a Life Interest in an Estate including a Reversion expectant on the Death of the Life Tenant in the Estate, J. R. Hart, xxxii, 460.
- Redemption prices, W. B. Paterson, xxxv, 255.
- Charges upon, W. B. Paterson, xxxv, 255.
- For Estate Duty under "The Finance Act, 1894", xxxvi, 81.

REVERSIONARY LIFE INTERESTS AND INTERESTS IN POSSESSION, W. B. Paterson, xxx, 536.

REVERSIONER, Rights of, as to Policies effected to secure advances, T. B. Sprague, xxvii, 121; F. E. Nightingale, xxx, 10.

REVERSIONER AND LIFE TENANT, On the equitable apportionment of a Fund between, C. Jellicoe, vi, 61; A. Baden, xvi, 269, 281; H. W. Porter, xvi, 285; E. Smyth, xvi, 386; T. B. Sprague, xviii, 77.

"REVIEW", Extract from:—

— Cost of Life Assurance, xxiii, 360.

REVIEWS. *See also* **Translations.**

- W. T. Thomson, "Notes on the Pecuniary Interests of Heirs of Entail", i, 103*.
- — "Actuarial Tables, Carlisle 3 per-cent. Single Lives and Single Deaths; with Auxiliary Tables", iii, 340. Errata, iii, *inset*.
- P. Gray, "Tables and Formulæ for the Computation of Life Contingencies", i, 104*.
- S. Brown, "A few Thoughts on Commission, Division of Profits, Selection of Lives, the Mortality in India, and other subjects relating to Life Assurance", i, 105*.
- F. G. P. Neison, Sr., "On the Mortality of Master Mariners", i, 241.
- — "On the Rate of Mortality among Persons of Intemperate Habits", ii, 96.
- A. Scratchley, "Industrial Investment and Emigration, being a Treatise on Benefit Building Societies and on the general principles of Associations for Land Investment and Colonization; with an appendix on Compound Interest, Tontines, and Life Assurance", i, 360.
- — "A Treatise on the Enfranchisement and Improvement of Copyhold, Life Leasehold and Church Property; with Rules and Tables for the formation of Copyhold, Enfranchisement, and Freehold Land Societies, and a Mathematical Appendix", v, 257.
- A. Quetelet, "Letters on the Theory of Probabilities as applied to Moral and Political Sciences (translated by O. G. Downes)", i, 362.
- W. Orchard, "Single and Annual Assurance Premiums for every Value of Annuity on Single or Joint Lives or Survivors, adapted to any table of Mortality at $2\frac{1}{2}$, 3, $3\frac{1}{2}$, 4, $4\frac{1}{2}$, 5, 6, and 7 per-cent; also a table for the formation of half-yearly and quarterly assurance premiums", i, 363.
- W. Lee, "Public Health Act (11 and 12 Vic., cap. 63). Summary of Experience on Disease and Comparative Rates of Mortality", ii, 97.
- P. Gray, H. A. Smith and W. Orchard, "Assurance and Annuity Tables, according to the Carlisle Rate of Mortality, at 3 per-cent", ii, 194.
- G. R. Porter, "Accumulation of Capital by the different Classes of Society", ii, 299.
- B. H. Todd, "Investigation Tables. Life Assurance Investigation Tables showing the value of a £100 Policy for any number of years, not exceeding 50, interpolated for months, according to the Carlisle Table of Mortality, and 3 per-cent interest; also Annual and Single Assurance Premiums, Carlisle Table 3 per-cent interest, interpolated for months", ii, 300.
- E. J. Farren, "Life Contingency Tables, Part 1. The Chances of Premature Death, and the Value of Selection among Assured Lives", iii, 181.
- W. Bridges, "The Prudent Man's Almanac for 1852, with Essays and Illustrations of every branch of Assurance", iii, 183.

REVIEWS—continued.

- Dr. W. Farr, "Report on the Mortality of Cholera in England in 1818-9", iii, 184.
- — "Letter appended to the Registrar-General's 12th Annual Report", iv, 266.
- — "English Life Table; Table of Lifetimes, Annuities, and Premiums", xii, 109.
- E. Sang, "Essays on Life Assurance", iii, 260.
- — "Treatise on the Valuation of Life Contingencies, arranged for Students", xii, 110.
- Mrs. G. R. Porter, "Rational Arithmetic", iii, 264.
- R. A. Ward, "Treatise on Investments", iii, 265.
- C. A. M. Willich, "Popular Tables giving information for ascertaining the Value according to the Carlisle Table of Mortality, of Lifehold, Leasehold, and Church Property; Renewal Fines, &c.", iii, 341; Ditto, Fourth Edition, viii, 349.
- J. Francis, "Annals, Anecdotes, and Legends; a Chronicle of Life Assurance", iv, 75.
- Sir R. Christison, "An Investigation of the Deaths in the Standard Assurance Company", iv, 76.
- Dr. J. Begbie, "Medical Statistics of Life Assurance. Observations, on the Causes of Death among the Assured of the Scottish Widows' Fund and Life Assurance Society, from 1846 to 1852", iv, 76.
- W. Newmarch, "The new supplies of Gold; Facts and statements relative to their actual amount and their present and probable effects", iv, 78.
- — "On the Loans raised by Mr. Pitt during the first French War, 1793-1801; with some statements in defence of the Methods of Funding employed", v, 256.
- J. J. Sylvester, "Analysis of his Theory of the Conjugate Relations of two rational integral functions, comprising an application to the Theory of Sturm's Functions, and that of the greatest Algebraical Common Measure", iv, 142.
- C. J. Bunyon, "A Treatise on the Law of Life Assurance upon the Constitution of Assurance Companies, the Construction of their Deeds of Settlement, the Sale of Reversionary Interests and Equitable Liens arising in connection with Life Policies; with an Appendix of precedents for the Assignment of Policies by way of Sale, Mortgage, and Settlement; Notes of Cases; Statutes; and an index of Private Acts obtained by Insurance Companies", iv, 145; ditto, Second Edition, xv, 222. "Law of Life Insurance", xiv, 472; ditto, Fourth Edition, J. E. Faulks, xxxix, 120.
- E. Cheshire, "The Results of the Census of Great Britain in 1851, with a description of the Machinery and the processes employed to obtain the Returns; also an Appendix of Tables of Reference", iv, 147.
- A. G. Finlaison, "Report on the Return of the Sickness and Mortality in Friendly Societies", iv, 269.
- — "East India Company's Regulations for Examinations of Candidates", v, 258.
- H. W. Lobb, "Hygiene, or the Handbook of Health", vi, 110.
- S. L. Laundy, "A Table of Quarter-Squares of all Integer Numbers up to 100,000, by which the product of Two Factors may be obtained by the aid of Addition and Subtraction alone", vi, 234.
- Griffith Davies, "A Treatise on Annuities, with numerous Tables, based on the Experience of the Equitable Society, and on the Northampton Rate of Mortality", vi, 234.
- F. Thoman, "Theory of Compound Interest and Annuities, with Logarithmic Tables", viii, 350.
- H. W. Porter, "An Essay on Life Assurance; being a popular exposition of the subject, and a plea for its more general adoption", ix, 58.
- "Fifth Annual Report of the Superintendent of the Insurance Department, State of New York", xii, 110.
- Lt.-Col. W. H. Oakes, "Table of the Reciprocals of Numbers from 1 to 100,000, with their Differences, by which the Reciprocals of Numbers may be obtained up to 10,000,000", xii, 362.
- Rev. J. A. Galbraith, "Manual of Algebra", xiv, 59.

REVIEWS—*continued.*

- C. Walford, "Insurance Guide and Handbook, &c.", xiv, 409.
- "Insurance Cyclopædia", xix, 69.
- H. Scheffler, "Mortality and Insurance treated in a new manner (Sterblichkeit und Versicherungswesen neu behandelt)", xv, 292.
- Dr. H. Lonsdale (Editor), "John Heysham, M.D., Life of, and his correspondence with Mr. Joshua Milne relative to the Carlisle Table of Mortality", xvi, 221.
- T. B. Sprague, "Life Insurance in 1872; being a Summary and Analysis of the Accounts of the Life Insurance Companies of Great Britain and Ireland", V. Senés, xvii, 291.
- — "Article on Annuities in the Ninth Edition of the 'Encyclopædia Britannica'", xx, 112.
- — "On Probability and Chance, and their connection with the business of Insurance", G. F. Hardy, xxxi, 315.
- C. Crawley, "The Law of Life Insurance, with a Chapter on Accident Insurance", G. H. Ryan, xxiv, 136.
- Dr. R. E. Thomson, "The different Aspects of Family Phthisis in relation especially to Heredity and Life Assurance" (Editorial), xxiv, 443.
- "Mémorial of Augustus De Morgan" (by his wife), C. D. Higham, xxv, 137.
- G. Chrystal, "Algebra; an Elementary Text-Book", T. E. Young, xxvi, 223.
- — "On some Fundamental Principles in the Theory of Probability", G. F. Hardy, xxxi, 315.
- A. S. Wing, "Mortality Experience of the Provident Life and Trust Company of Philadelphia", T. B. Sprague, xxvi, 316.
- Otto Samson, "The Pole Star Life Insurance Company of Stockholm, its operations during the first fifteen years of its existence", T. B. Sprague, xxvi, 471.
- A. H. Smee and T. G. Aekland, "Assurance Risks of Warfare", H. J. Rothery, xxviii, 463.
- G. B. Longstaff, "Studies in Statistics, Social, Political, and Medical", A. F. Burridge, xxix, 459.
- — Dr. R. W. Felkin, "On the Geographical Distribution of Tropical Diseases in Africa", A. E. Sprague, xxxii, 65.
- D. P. Fackler, "The effect of a decreasing Rate of Interest on Annuities and Policy Reserves", G. H. Ryan, xxxii, 272.
- W. A. Bowser, "Friendly Societies' Valuation and other Tables", G. F. Hardy, xxxiii, 268.
- W. Sutton, "Report on Sickness and Mortality Experience of Friendly Societies in England and Wales", G. F. Hardy, xxxiii, 268.
- Karl Pearson, "The Chances of Death, and other Studies in Evolution", G. F. Hardy, xxxiii, 530.
- "Mémoires pour servir à l'histoire des Assurances sur la vie et des Rentes Viagères aux Pays-Bas", F. Hendriks, xxxiv, 386.
- G. Wood Hill, "On the Law of Real Property in England", A. R. Barrand, xxxiv, 392.
- George Clare, "The London Daily Stock and Share List", A. R. Barrand, xxxiv, 394.
- Sir Hugh Beever, "The Declension of Phthisis", Dr. A. Newsholme, xxxiv, 584.
- T. E. Young, "On Centenarians and the Duration of the Human Race, a fresh and Authentic enquiry, with Historical Notes, Criticisms and Speculations", A. Levine, xxxiv, 588.
- — "Insurance; a practical exposition for the Student and Business Man" (Editorial), xxxviii, 375.
- A. C. Clauson, "The Companies' Acts", W. O. Nash, xxxv, 49.
- "Transactions of the Second International Actuarial Congress, London, 1898", R. Todhunter, xxxv, 135.
- "British Offices' Experience, 1863-1893, collected and arranged by the Institute of Actuaries and the Faculty of Actuaries in Scotland." Unadjusted Data. Life Annuitants, A. Levine, xxxv, 147.
- — Assured Lives Whole-Life, Males; Whole-Life, Females; Endowment and Minor Classes of Assurance, A. Levine, xxxv, 484.

REVIEWS—*continued.*

- "British Offices' Life Tables, 1893." Adjusted Data. Mortality and Monetary Tables. Aggregate Data, OM and $OM^{(a)}$ (Editorial), xxxvii, 439.
- — Life Annuity Tables. Select Data, $OM^{(a)}$ and $OM^{(a)}$ (Editorial), xxxvii, 511.
- — Mortality and Monetary Tables. Select Data, OM (Editorial), xxxviii, 287.
- — (H. J. Baker and A. H. Raisin). Mortality and Monetary Tables. Select Data. OM and $OM^{(a)}$ (Editorial), xxxix, 123.
- — "Assured Lives and Annuity Tables. An Account of the Principles and Methods adopted in the Compilation of the Data, the Graduation of the Experience, and the Construction of deduced Tables", R. Todhunter, xxxviii, 356.
- A. L. Bowley, "Elements of Statistics", J. Holliday, xxxvi, 197.
- W. G. Hayter, "The Law of Mortgage", J. E. Faulks, xxxvi, 287.
- R. Todhunter, "Institute of Actuaries' Text Book (Part I). Interest (including Annuities-Certain)", A. Levine, xxxvi, 385.
- G. King, "Institute of Actuaries' Text Book (Part II), Life Contingencies (including Life Annuities and Assurances), Second Edition", R. Todhunter, xxxvii, 104.
- C. L. Landré, "A Treatise on the Mathematics of Life Insurance", F. E. Colenso, xxxvii, 107.
- W. Sanders and T. G. Ackland, "A Digest of the Results of the Census of England and Wales in 1901" (Editorial), xxxviii, 290.
- "Experience of the Gotha Life Office, 1829-1878", T. E. Young and W. R. Strong, xxxviii, 292.
- "Experience of 34 Life Companies upon 98 Special Classes of Risks, 1903." Compiled and Tabulated by the Actuarial Society of America, J. D. Watson, xxxviii, 363.
- A. W. Watson, "Sickness and Mortality Experience (1893-97) of the Manchester Unity of Oddfellows" (Editorial), xxxviii, 369.
- Dr. J. Karup, "Amendment of the Basis of Calculation of the Gotha Life Office", T. E. Young and W. R. Strong, xxxviii, 373.
- Dr. F. P. Cantelli, "On Fitting Curves to a series of Measurements or Observations", W. P. Elderton, xxxix, 376.
- M. d'Oagne, "The Simplification of Calculations by Mechanical and Graphical Processes", W. R. Strong, xxxix, 377.

Notices of Publication:—

- A. W. Sunderland, "Notes on Finite Differences", xxv, 368.
- J. Chisholm, "Tables for finding the Values of Policies of all durations according to any Table of Mortality or any Rate of Interest", xxv, 368.
- D. H. Wells, "Mortality Experience of the Connecticut Mutual Life Insurance Company, 1846-1878", xxv, 368; G. H. Ryan, xxvi, 254; T. B. Sprague, xxvi, 471; J. Chatham, xxix, 122.
- J. Meikle, "On the Official Publications of the Mortality of Assured Lives", xxv, 368.
- W. R. Macdonald, "Notes on the Theory of Logarithms", xxv, 368.
- G. H. Ryan, "On the several Mortality Tables employed by Life Assurance Companies in the valuation of their Annuity Contracts", xxv, 368.
- Dr. W. Farr, "Vital Statistics (Edited by N. A. Humphreys)", xxv, 368.

REVIVED POLICIES. Method of Treating in a Mortality Investigation, T. B. Sprague, xxxi, 207.

REYNOLDS (W. J.). On the Results to be looked for on Tossing a Dynamically True Coin, iv, 65. *See also* C. Jellicoe, iii, 326.

RISKS. *See* Life Risks.

RISK PREMIUMS. *See* Premiums.

ROBERTSON (A. M.). On Decimal Numeration and Decimal Coinage, iv, 370, 373.

ROBERTSON (J. A.). On a New Method of Performing Approximately certain Operations in Multiplication and Division, xxxii, 160. Reference, J. Chatham, xxxii, 137.

- ROBERTSON (Dr. W.).** On the Mortality of Males and Females from Peritonitis at Ages between Fifteen and Fifty, xix, 118.
- Notes on Extra Risk attaching to Occupations of Engine Drivers and Stokers, xix, 211.
- The Death Rates among Infants in Scotland, xxii, 140.
- The Influence of Marriage on the Death Rate, being Observations on Dr. J. Stark's Conclusions, xxiii, 47.
- ROTHERY (H. J.).** Fines for Deferred Assurance with Deferred Premiums, xxviii, 483. References, H. E. Nightingale, xxx, 26; J. E. Faulks, xxxv, 259.
- On a System of Bonus Distribution considered in Relation to the Office Premiums and Modes of Valuation, xxx, 131. References, G. J. Lidstone, xxxii, 89; J. Chatham, xxxii, 437.
- Review:—
- "Assurance Risks of Warfare", by A. H. Smee and T. G. Ackland, xxviii, 463.
- Appointment as Editor of the *Journal*. Reference, C. D. Higham, xxx, 579.
- ROTHERY (H. J.) and HARDY (G. F.).** On the Mortality of Assured Lives in the West Indies, chiefly Barbados, xxvii, 161. References, G. King, xxvii, 218; G. H. Ryan, xxvii, 452, xxx, 7; J. Chatham, xxix, 92; Dr. T. G. Lyon, xxix, 542; G. J. Lidstone, xxx, 213; W. J. H. Whittall, xxxi, 164, 182; T. G. Ackland, xxxiii, 70, 132; A. W. Tarn, xxxiv, 519.
- ROWE (JOHN, of London and Exeter).** His Case Book from 1775 to 1790, with Introductory Notice, F. Hendriks, vii, 136.
- RURAL DISTRICTS, 1836-1840** (Neison), Mortality in, G. F. Hardy, xxvii, 285.
- RUSHER (E. A.) and SCHOOLING (F.).** The Mortality Experience of the Imperial Forces during the War in South Africa, 11 October 1899 to 31 May 1902, xxxvii, 545.
- RUSSIA.** See Foreign Intelligence.
- RUSSIAN WAR FUND.** See Patriotic (Russian War) Fund.
- RYAN (G. H.).** On the Subject of Extra Risks considered in Relation to a Hypothetical Table of Mortality based on the H^M Table, xxiv, 19. References, Author, xxiv, 306, xxvi, 414, xxx, 201; F. W. White and W. J. H. Whittall, xxiv, 390; F. W. White, xxiv, 417; G. F. Hardy and H. J. Rothery, xxvii, 177; H. J. Rothery, xxviii, 476.
- On a Method for Determining the Extra Premiums to be Charged in respect to Two-Life Assurances, xxiv, 305.
- On the Analogy between an Annuity-Certain and a Life Annuity, xxv, 443.
- On the Method of Estimating Expected Deaths and Expected Claims, with Observations upon certain Modes of deducing the Number exposed to the Risk of Death, xxvi, 249. Correspondence (from *Insurance Record*), xxvi, 274. References, G. F. Hardy and H. J. Rothery, xxvii, 165; Author, xxviii, 222, xxix, 180; J. Chatham, xxix, 83, 91, 98, 100, 102, xxxii, 397; W. J. H. Whittall, xxxi, 168, 193; T. G. Ackland, xxxiii, 70, 143.
- The Mortality Experience of the Marine and General Mutual Life Assurance Society in respect of Lives of Mariners, from 1852-79, xxvi, 413. References, H. J. Rothery, xxvii, 195; G. J. Lidstone, xxx, 216.
- The Mortality Experience of the Washington Life Insurance Company, xxviii, 220. Reference, J. Chatham, xxix, 86, 121.
- Some Statistics of Female Assured Lives, xxix, 71.
- On a method of determining the Gain or Loss from Mortality in an Annuity Company, xxx, 189. Reference, T. J. Searle, xxx, 522, 523.
- On a means of calculating the Expected Death Strain in a Life Office, xxx, 196. Reference, J. Chatham, xxxii, 399, 400.
- (I) On the Standard of Solvency in Life Assurance Companies as Affected by Guaranteed Benefits. (II) On certain Methods of Re-constructing an Insolvent Life Assurance Company. (III) Some Observations on Insurance Matters in Canada and the United States, xxxii, 25, 33, 39. References, E. Woods, xxxii, 58; F. W. Fulford, xxxv, 227.
- The Case for Census Reform, xxxvi, 329.

RYAN (G. H.)—*continued*.

- **Methods of Valuation and Distribution of Profits in the United Kingdom** (reprinted from the Transactions of the Third International Congress of Actuaries, 1900), xxxviii, 69.
- The Treatment of the Discontinuances in the British Offices' Experience, 1863-93 (extracts from the *Insurance Record*), xxxi, 309, 313.
- **Editorial Remarks:**—
- — Effect of a Decreasing Rate of Interest on Annuities and Policy Reserves, xxxii, 272.
- **Review:**—
- — "The Law of Life Insurance, with a chapter on Accident Insurance", by C. Crawley, xxiv, 136.
- Notes on Friendly Society Legislation, xxv, 24.
- "On the several Mortality Tables employed by Life Assurance Companies in the valuation of their Annuity Contracts" (*Notice of Publication*), xxv, 368.
- Liability of Life Assurance Companies to Income Tax, xxvii, 39.
- "Surrender Values" (*Bankers' Magazine*, May 1891. Reference, H. J. Rothery, xxx, 138.
- Obituary Notice of W. M. Makeham, xxx, 1. Reference, F. Schooling, xxxii, 309.
- Obituary Notice of W. S. B. Woolhouse, xxxi, 362.
- Appointed Editor of the *Journal*, xxxi, 403. Resignation, xxxiii, 57. References, A. J. Finlaison, xxxiii, 59; R. P. Hardy, xxxiii, 59.

RYLEY (E.). Method of approximating to the Value of p in $a = \frac{(1+p)^n - 1}{p}$, i, 332.

- Formulae expressing the Value of all the Fines payable on the Renewal of Copyhold leases, iv, 367.

SADLER (M. T.). "Law of Population", Notice of, S. Brown, iii, 19; A. Day, x, 191. Reference, T. B. Sprague, xxv, 168.

SALARY, Percentage Deductions from, An Enquiry into the Methods and General Principles in the Calculation of, for Pension Funds, J. McGowan, xxxvii, 15.

- — To provide Superannuation, W. Sutton, xxxvii, 22. Reference, T. G. Ackland, xxxvii, 40.

See also Pension Funds.

SAMOT (D. J. A.). Mortality Experience of the National Life Insurance Company of Rotterdam, 1863-73, xix, 250.

- On Formulas for the Values of Endowment Policies, xx, 344.
- On a Method of Interpolating the Values of Premiums for Endowments and Endowment Assurances when these are given only for certain intervals of age, xx, 347.
- **New Formulas for the calculation of the probabilities which occur in the question of Invalidity or Permanent Incapacity for work**, xxi, 288. Reference, T. B. Sprague, xxi, 418.

SAMSON (OTTO). "The Pole Star Life Insurance Company of Stockholm, its operations during the first fifteen years of its existence." *Review* by T. B. Sprague, xxvi, 471.

SAMWER (Dr. KARL). The Business Management of Foreign Life Insurance Companies according to German Imperial Law, xxxvi, 374.

SANDERS (W.) and ACKLAND (T. G.). A Digest of the Results of the Census of England and Wales in 1901. *Review* Editorial, xxxviii, 290.

SANG (E.). Opinion on the Contrivances required to render Contingent Reversionary Interests Marketable Securities, i, 18*, 151, 287.

- **On the Calculation of Life Contingencies** Extract from an Address to the Actuarial Society of Edinburgh, xv, 257.
- On Mechanical Aids to Calculation, xvi, 253.
- On Errata in his Seven-figure Logarithms, xvii, 142, 298.
- "Essays on Life Assurance." *Review*, iii, 261.
- "Treatise on the Valuation of Life Contingencies, arranged for the use of Students." *Review*, xii, 110.
- "Essays on Life Assurance", 1810. Reference, J. Sorley, xxii, 327.
- Formula for Interpolation. Reference, J. Meikle, xxiii, 394.

SARGENT (G. W.). See **Wright (Hon. E.).**

SCALES (W. H.). Tables of the Sickness and Mortality amongst the European and Native Troops in the Madras Army (1842-1851), v, 245.

SCHEFFLER (Dr. H.). "Sterblichkeit und Versicherungswesen neu behandelt" (Mortality and Insurance treated in a new manner). *Review*, xv, 292.

SCHJOLL (O.). The Mortality Experience of the Norwegian General Widows' Fund, xxviii, 89.

— On the Calculation of the Contributions to be made to an Annuity Fund for Widows and Children, by the Members of a Society all of whom, whether married or single, are obliged to contribute, xl, 200.

SCHLEISNER (P. A.). Vital Statistics of Iceland, Deaths by drowning, i, 352; Fertility of Women, i, 352.

SCHOOLING (F.). On some Methods of grouping Policies for the purpose of Valuation, xxxii, 301. Reference, W. R. Dovey, xxxiv, 353.

— On the Calculations of George Barrett in the early part of this (nineteenth) century, xxxiii, 367.

SCHOOLING (F.) and RUSHER (E. A.). The Mortality Experience of the Imperial Forces during the War in South Africa, 11 October 1899 to 31 May 1902, xxxviii, 545.

SCOTLAND, On Entailed Estates in, T. B. Sprague, xix, 38.

— Registration of Deeds affecting Land in, A. G. Donald, xxxix, 255.

"**SCOTSMAN**", Extract from:—

— "Married Women's Policies of Assurance (Scotland) Act, 1880", xxiii, 51.

SCOTT (G.). On the calculation of the odds of throwing any specified number with two, three, four, or more dice, iv, 247.

— On certain means, furnished by the Census of 1851, for extending the application of the principle of Assurance to the social condition, vi, 47.

— On the Method of deriving from a Table of Premiums, the Rate of Mortality on which it is based, vi, 231. Reference, H. A. Smith, vi, 297.

SCOTTISH AMICABLE SOCIETY, Observations on the Tables of the Mortality Experience of the, W. Spens, x, 61. Reference, J. Chatham, xxix, 97, 118.

— Experience as to the Insurance of the lives of Publicans, J. Stott, xx, 35.

SCOTTISH BANKS, On an Investigation of the Mortality and Marriage Experience of the Widows' Funds of the, A. Hewat and J. Chatham, xxxi, 428.

SCOTTISH EQUITABLE SOCIETY, Letter from "Philo-Scotiae" on a pamphlet published by the, viii, 297.

— Mortality Experience of Female Lives, T. B. Sprague, xxxi, 205, 226.

SCOTTISH LIFE OFFICES. Remarks on the Association of Managers (Editorial), i, 119*.

— Correspondence with the Treasury as to the Income Tax, iv, 239.

— Statement of the amount of existing Assurances in them, in 1861; their Annual Income and Accumulated Funds, R. Christie, x, 235.

— Report of Committee as to Insurances on the lives of Females, xix, 209.

— Investigation into the Mortality in the Liquor Trade, xxxiii, 245, 252.

SCOTTISH OFFICES (Ten), Mortality of, W. R. Dovey, xxiii, 286; G. H. Ryan, xxvi, 275; J. Chatham, xxix, 169.

SCOTTISH WIDOWS' FUND, Mortality Experience of, G. King, xxx, 126.

— Mortality from Cancer, G. King and Dr. A. Newsholme, xxxvi, 139.

SCRATCHLEY (A.). "Industrial Investment and Emigration; a Treatise on Benefit Building Societies and on the general principles of Associations for Land Investment and Colonisation. With an Appendix on Compound Interest, Tontines and Life Assurance." *Review*, i, 360.

— "Treatise on the Enfranchisement and Improvement of Copyhold, Life-Leasehold and Church Property, &c." *Review*, v, 257.

— On Post Obits. References, "An Actuary", vii, 52; "G", vii, 56; H. A. Smith, vii, 111; T. B. Sprague, xiv, 419, 425.

— "Treatise on Life Assurance Societies." Reference, R. Tucker, ix, 257.

— "Remarks on Moral Expectation and Risk of Insuring Old Lives." Reference, T. B. Sprague, xiii, 38.

SCROFULA. See **Consumption.**

SEARLE (T. J.). On a Table of Coefficients arising out of a given Mortality Table for finding Annuity-Values at any Rate of Interest that may be required, xxviii, 192.

— On the Progress of Profit in a Life Assurance Fund, xxx, 193. References, J. Chatham, xxxii, 402; R. Todhunter, xxxv, 8.

— On a Formula for calculating Policy Values, xxx, 557. Reference, J. Chatham, xxxi, 79.

— On the Transformation of Values from H^M to $H^{M(5)}$ Mortality, xxx, 559.

SECESSIONS. See Discontinuances and Withdrawal.

SELECTED VALUES OF THE FUNCTION, Integration by means of, W. S. B. Woolhouse, xxvii, 122.

SELECTION among Assured Lives, S. Brown, i, 20; E. Sang, i, 293; W. Spens, iv, 66, 139, x, 61; E. J. Farren, iii, 181, iv, 141; J. A. Higham, vii, 113, xx, 1; A. H. Bailey, ix, 317; W. M. Makeham, xii, 321; T. B. Sprague, xv, 30, 328, xx, 95; W. Sutton, xvi, 76, 149; G. King, xix, 381, xx, 233.

— As exercised by the Policyholder against the Company, J. A. Higham, i, 179.

— (Definition of, &c.), S. C. Thomson, xxi, 172. Different Classes of Diseases, W. R. Dovey, xxiii, 285. Rate of Mortality, J. Chatham, xxix, 81.

— And Expenses, J. Sorley, xxi, 192.

— On the Reserve that should be made for Recently-Assured Lives, R. Teece, xxii, 250; T. B. Sprague, xxii, 265.

— As affected by Bonus Options, G. F. Hardy, xxiii, 7.

— Instance of an ambiguous use of the word, T. G. Ackland, xxiii, 15.

— Effect of, on Sickness Rates, G. F. Hardy, xxvii, 291.

— Exercised by the Assured on Withdrawal, F. W. Fulford, xxxv, 207.

— Effect of, in the British Offices' Experience, 1863-93, T. G. Ackland, xxxvii, 122.

— Allowance for, in the valuation of Whole-Life Policies, G. King, xl, 1; O. F. Diver, xl, 15; T. G. Ackland, xl, 42.

— On a form of Spurious Selection which may arise when Mortality Tables are amalgamated, W. P. Elderton, xl, 221.

SELECT LIVES (Mortality among), W. Spens, x, 61, 197, xii, 304; G. King, xix, 381; T. B. Sprague, xxi, 229, xxii, 391, 394. Ditto in Germany (Brune's Table), iii, 30.

— On the Mortality amongst Lives selected at ages 75 to 81 for Government Annuities, W. T. Thomson, i, 29*.

— On the inadequacy of existing Data for determining the Rate of Mortality, and on the chances of premature Death among them, E. J. Farren, iii, 206, iv, 66, 141. See also **W. Spens**, iv, 1, 139.

— (Males) Diagram showing Values of Annuities at 4 per-cent interest deduced from the Equitable Tables, W. Spens, x, 60.

— Values of Annuities on them, G. W. Berridge, xix, 351.

— Premiums for their Insurance, T. B. Sprague, ix, 95.

— Government Male Annuitants, A. J. Finlaison, xxii, 444; J. Chatham, xxix, 142.

SELECT MORTALITY TABLES. On their Construction and Use, T. B. Sprague, xxi, 229, xxii, 391, 407; J. Meikle, xxxi, 217. Reserves, G. King, xxi, 253, xxii, 445; R. R. Tilt, xxxii, 17.

— Not suited to Woolhouse's Method of Graduation, G. King, xxi, 54.

— Adjustment of, by Makeham's Formula, G. F. Hardy, xxxi, 359, xxxiii, 493.

— On their application to the Valuation of Whole-Life Policies, G. King, xl, 1; O. F. Diver, xl, 15; T. G. Ackland, xl, 42.

SENÉS (V.). Review:—

— "Life Insurance in 1872" (T. B. Sprague), xvii, 291.

SERIES (Divergent). On the Summation of, A. De Morgan, xii, 245.

— On the Convergency of, A. De Morgan, xiv, 361.

SETTLED LANDS ACT, Power of Life Tenant to grant leases under, H. J. Rothery, xxx, 74; D. A. Bumsted, xxx, 76.

SETTLEMENT POLICIES. A. R. Barrand, xxxiii, 219.

— Under the Married Women's Property Acts, 1870 and 1882, T. B. Sprague, xxiv, 77. References, C. J. Bunyon, xxiv, 82; W. K. Lemon, xxix, 405.

See also **W. Hughes**, xxvii, 58.

— In the Australasian Colonies, R. Teece, xxv, 361.

- SETTLEMENTS.** On the Legal Position of a Purchaser (for Value) from the Assignee under a Voluntary Settlement, in the event of the subsequent Bankruptcy of the Settlor, G. J. Lidstone, xxxv, 371.
- SEVENTEEN OFFICES' EXPERIENCE,** Analysis of, J. A. Higham, i, 179. References, S. Brown, ii, 203; W. Spens, x, 197; W. M. Makeham, xiii, 342; W. J. H. Whittall, xxxi, 175.
- The Construction of the Table, W. S. B. Woodhouse, xiii, 75; and the Graduation, xii, 138.
- SEXES,** On the proportion of, as shown by the Census of 1851, G. Scott, vi, 47.
- On the Relative Vitality of, S. M. Drach, vi, 232; A. H. Bailey, ix, 318; W. M. Makeham, xii, 313; C. Walford, xix, 174.
- Proportion of Marriages at different ages of, in Belgium, Massachusetts, and England, S. Brown, vii, 188.
- On the influence of various conditions upon the proportions of, at birth, J. N. and Dr. C. J. Lewis, xi, 154.
- SEX OF CHILDREN,** S. Brown, iii, 17; G. Hopf, iii, 255; A. Day, xii, 204; W. A. Bowser, xvii, 29; Dr. J. Clarke, xix, 178.
- SHAW (C. G.).** On the Values of Isolated Reversions, ii, 295.
- Method of obtaining Formulæ for the Value and Amount of an Annuity for n years, and commencing at a and increasing by c yearly, v, 152.
- "D and X" Tables and Annuity Values for 3, 4, 5, and 6 Joint Lives of equal age; Carlisle 3 per-cent, v, 180.
- SHEPPARD (H. N.).** On Approximate Values of the Force of Mortality, xxxii, 295. Reference (Editorial), xxxii, 295; G. J. Lidstone, xxxii, 390.
- On the formulæ for Complete Annuities, xxxii, 458.
- SICKNESS,** Law of, as exemplified in the Tables of Contributions, &c., used by Friendly Societies, H. Tompkins, iii, 7; T. R. Edmonds, v, 127; S. Brown, xi, 347; B. Gompertz, xvi, 329; W. M. Makeham, xvi, 408. On Scratchley's, S. Brown, xi, 347.
- In Friendly Societies, S. Brown, ii, 342; H. Tompkins, v, 6; T. R. Edmonds, v, 127.
- In Friendly Societies in France, G. Hubbard, iii, 59; S. Brown, v, 208.
- Amongst European and Native Troops in Madras Army, W. H. Scales, v, 245.
- Allowance, on A. G. Finlaison's Tables, J. A. Higham, vii, 112.
- Dr. Heym's Table of Premiums, viii, 352. Reference, W. Lazarus, vii, 220.
- Among Railway Officials compared with other classes of persons (Finlaison's Tables), H. W. Porter, xi, 155.
- Suggested Construction of Select or Analysed Sickness Tables, F. W. Frankland, xxii, 454.
- Insurance of Workmen, German Law relating to, P. Köhne, xxiv, 220.
- In Danish Societies, 1878–82, G. F. Hardy, xxvii, 270.
- Mortality in various Sickness Societies, G. F. Hardy, xxvii, 290.
- The German Law of Insurance against Invalidity and Old Age, T. E. Young, xxix, 269.
- Methods of Analysing and presenting the Sickness Experience of Friendly Societies, A. W. Watson, xxxv, 268.
- Duration of, A. W. Watson, xxxv, 304.
- Rate of Sickness according to Several Tables, A. J. Cook, xxv, 30.
- **Benefits** in Friendly Societies, Calculation and Valuation of, G. F. Hardy, xxvii, 270; R. P. Hardy, xxxi, 114.
- In Clerks' Associations, T. G. Ackland, xxxiii, 164.
- **Tables,** Ratcliffe's (Manchester Unity of Oddfellows), F. W. Frankland, xxi, 380.
- — Highland Societies, Ansell's, Neison's, 1836–40, Finlaison's, 1846–50, Ratcliffe's (Manchester Unity) Foresters, 1871–75, G. F. Hardy, xxvii, 281–8.
- — And Statistics based on the Experience of the Hearts of Oak Benefit Society for the period 1884–1891, R. P. Hardy, xxxi, 115, 144.
- — Summary of existing Tables, A. W. Watson, xxxv, 270.
- SICKNESS AND MORTALITY,** Returns in Friendly Societies, A. G. Finlaison. *Review*, iv, 269.
- In Friendly Societies, S. Brown, xi, 343.

SICKNESS AND MORTALITY—*continued.*

— Experience of Friendly Societies in England and Wales, Report on (W. Sutton), *Review* by G. F. Hardy, xxxiii, 268.

— An Account of an Investigation of the Experience of the I.O.O.F., Manchester Unity, during the five years, 1893-1897 (A. W. Watson), *Review* (Editorial), xxxviii, 369.

— I.O.O.F., Manchester Unity, Experience, 1893-1897, On the Graduation of, J. Spencer, xxxviii, 334.

SILVER CURRENCY IN INDIA, A. J. Finlaison, xxxi, 413.

SIMPSON'S FORMULA for the Value of an Annuity on the last Survivor of three lives. The dependence between it and Gompertz's Law of Mortality, A. De Morgan, viii, 181, x, 27, 237; W. S. B. Woolhouse, x, 121, xv, 399.

— On its practical use by the help of the Institute Life Tables, W. Godward, xvii, 266. On an error resulting therefrom, E. Smyth, xvii, 379.

— On the Generalization of, R. Henderson, xxxii, 293; J. M. Allen, xxxiii, 535; A. Levine, xxxiii, 538.

SINGLE-LIFE CONTINGENCIES, Calculation of, A. De Morgan, xii, 328, xiii, 129.

SINKING FUND ASSURANCES, Some Notes on, J. E. Faulks, xxxiv, 562.

SLIDE-RULE, Short Account of its Construction and Use, J. A. Robertson, xxxii, 160.

SMALL-POX. Does Vaccination afford any Protection against it? T. B. Sprague, xx, 216.

— And Vaccination, A. F. Burrridge, xxxvii, 245.

SMART'S INTEREST TABLES, Note on, R. Wilding, xxii, 129.

SMEE (A. H.) and **ACKLAND (T. G.)**. "Assurance Risks of Warfare." *Review* by H. J. Rothery, xxviii, 463.

— On the Assurance Risks incident to Professional Military and Naval Lives, and the Rates of Extra Premiums which should be Charged for such Risks. Being Extracts from a Joint Report made in May, 1890, to the Board of Directors of the Gresham Life Assurance Society, xxxiv, 358. Reference, J. J. McLauchlan, xxxiv, 262.

SMITH (A. GILLIES). "Report on the Widows' Fund of Writers to the Signet", T. B. Sprague, xxii, 92.

SMITH (B.). Mortality in the Metropolis for the Year 1852: Table Showing for each Week of the Year the several Diseases, Births and Deaths of Males and Females, Age at Death, the Districts in which the Deaths occurred, the Temperatures and Meteorology, and the Increase of Population, iii, 252. Ditto for 1853, iv, 262.

SMITH (H. A.). On the Value of a Survivorship Annuity on A after B, provided B die within n years, v, 352. See also **R. Tucker**, v, 255.

— On the Equation of Arbitrary Rates of Life Premiums, vi, 297.

— "Mr. Seratchley on Post Obits", vii, 111.

— Letters on S. Younger's Papers (vii, 183, 295) as to the Method of Testing the Solvency of an Assurance Company, vii, 294, 353.

— On certain Commutation Formulæ, viii, 116.

— On the Incongruity existing between the Rates of Premium charged at certain Ages, and the Benefits accruing thereunder, viii, 167. Reference, R. Tucker, ix, 245.

— On an Expression for the Value of a Term Assurance, Life against Life, ix, 295.

— On a Method of Estimating the Increase of Rate put on Endowment Assurances to meet Deterioration, x, 120.

— On S. Younger's Plan for the Assurance of Invalid Lives, x, 352, xi, 180. Mr. Younger's Reply, xi, 49.

— On a Table indicating the Annual Premium from the Single, and *vice versa*, xi, 176.

— On the late J. Finlaison's Tables (and his Method of Graduation), xiii, 58. Reference, W. Sutton, xx, 172.

— On J. W. Stephenson's Letter on the Value of Options, xiii, 103.

— On the Average Amount of a Sum Invested at Compound Interest for the Life of the Investor, xiv, 158.

SMITH (H. A.) - *continued*.

- On the Construction of Tables of Policy Values, xvi, 75.
- On the Expediency of Recording Law Reports in the *Journal*, xviii, 297.
- Tables deduced from S. Brown's Indian Experience, xviii, 372.
- On the D and N Formula for a Term Insurance, xix, 143.
- On the Loading of Assurance Premiums, xx, 145.
- Tables of Annual and Single Premiums for Endowment Assurance, Payable at the ages 20-75 for ages at entry 15-60, HM 3 per-cent, xxii, 143.

See also **Gray, Smith and Orchard**.

SMITH (H. W.). On the Re-adjustment of the Affairs of a Life Assurance Company which has Failed to come up to the Standard of a Net-Premium Valuation as required by Statute in the United States. (Read before the Actuarial Society of America). Extract from, G. H. Ryan, xxxii, 33.

SMITH (W. C.). Notes on "The Married Women's Policies of Assurance (Scotland) Act, 1880", xxiii, 50.

SMYTH (E.). On the Equitable Apportionment of a Fund between the Life Tenant and the Reversioner, xvi, 386. Reference, T. B. Sprague, xviii, 81.

— On the employment of the Institute of Actuaries' Life Tables in finding the value of an Annuity on the last Survivor of three Lives, xvii, 379.

— On **Tables for the Enfranchisement of Copyholds of Inheritance**, xxi, 381. References, G. S. Mathews, xxviii, 8, 12; Author, xxviii, 61, 67.

SOLUTIONS of Institute Examination Questions. *See* **Institute of Actuaries**.

SOLVENCY, Of an Assurance Company, the Method of Testing, S. Younger, vii, 183, 295; H. A. Smith, vii, 294, 353; T. B. Sprague, xvi, 229, xx, 291; A. H. Bailey, xvi, 389.

— In Life Assurance Companies. On the Standard of, as affected by Guaranteed Benefits, G. H. Ryan, xxxii, 25.

See also **Insolvent Life Offices**.

SORLEY (J.). Results of an unsuccessful attempt to graduate a Mortality Table by Makeham's Method, xx, 340.

— On the Valuation Reserve necessary for Diseased Lives and for Female Lives, subjected to an extra Premium, xx, 342.

— On the purchase of a complete Annuity, Investigation of Formulas, xx, 454.

— On **Expenses and Selection as affecting the Pure Premium Method of Valuation** (Read before the Actuarial Society of Edinburgh), xxi, 192. References, W. J. H. Whittall, xxxii, 21; S. G. Warner, xxxvii, 74.

— Remarks on G. King and G. F. Hardy's Paper on the Practical Application of Makeham's Formula to the Graduation of Mortality Tables, xxii, 230.

— **Observations on the Graduation of Mortality Tables, with Special Reference to the Conditions under which certain Methods are to be Preferred**, xxii, 309.

SOUTH AFRICA.

— Work and Development of Life Assurance Companies in, A. W. Tarn, xxxiv, 519.

— Life Assurance Legislation in, A. W. Tarn, xxxiv, 546.

— List of Native Life Offices transacting business in, in 1897, A. W. Tarn, xxxiv, 555.

— Mortality Experience of the Imperial Forces during the War in, 1899-1902, F. Schooling and E. A. Rusher, xxxvii, 545.

See also **Colonial Intelligence**.

SOUTH AFRICAN MUTUAL LIFE ASSURANCE SOCIETY. Mortality Experience. Reference, A. W. Tarn, xxxiv, 542.

SOUTH AFRICAN REPUBLIC (TRANSVAAL). Law Regulating Assurance Companies, xxxii, 61.

SOUTH AUSTRALIA.

— Mortality in, from Various Classes of Diseases, 1875, A. F. Burrridge, xxiii, 314.

— Population Tables, A. F. Burrridge, xxiv, 344.

— Life Insurance Companies Act, 1882, xxvi, 26.

See also **Colonial Intelligence**.

SPAIN. See Foreign Intelligence.

SPECIALISED MORTALITY EXPERIENCE. Thirty-four American Life Companies, 1903. *Review* by J. D. Watson, xxxviii, 363.

SPECIAL POLICIES, Valuation of, R. Todhunter, xxxv, 16.

"SPECTATOR" (New York), Extracts from:—

— On the Law of Ages at which Life Insurances are effected, S. C. Chandler, Jr., xvii, 56.

— On the Construction of a Graduated Table of Mortality from a Limited Experience, S. C. Chandler, Jr., xvii, 161.

— The Growth of Life Companies, xviii, 355.

— Economical Rates of Reserve and Premium, xviii, 428.

— How to wind up a Life Insurance Company, xx, 289.

— What to do with Insolvent Life Companies, xx, 439.

— Valuations of Policies in Bankrupt Life Insurance Companies, xxiii, 306.

— New Departure in American Life Insurance, xxiii, 436.

— American Life Insurance Dividends, xxiv, 52.

SPENCER (H.). The Influence of Marriage on the Death Rate, being Observations on Dr. J. Stark's Conclusions (Extracted from the "Study of Sociology"), xxiii, 42.

SPENCER (J.). On Central Difference Interpolation Formulæ, xxxiii, 319.

— On the Determination of the Rate of Interest in an Annuity-Certain, xxxviii, 280.

— On the Graduation of the Rates of Sickness and Mortality presented by the Experience of the Manchester Unity of Oddfellows during the period 1893-97, xxxviii, 331.

— Some practical hints on Two-variable Interpolation, xl, 293.

SPENS (W.). On the Inadequacy of existing Data for determining the Rate of Mortality among Select Lives, iv, 1, 139. See also E. J. Farren, iii, 206, iv, 66, 141.

— Observations on the Mortality Experience of the Scottish Amicable Life Assurance Society, x, 61, 197. Errata, x, at 1. References, T. B. Sprague, xv, 328, 340; J. Chatham, xxix, 97, 118.

— On the Rate of Mortality among Select Lives, xii, 304.

SPINSTERS, Rate of Marriage among, T. B. Sprague, xxii, 352.

SPRAGUE (Dr. A. E.). On the rates of Mortality in Certain parts of Africa, xxxiii, 285. References, L. K. Pagden, xxxiii, 360; A. Levine, xxxiii, 517.

— Review:—

— — "On the Geographical Distribution of Tropical Diseases in Africa" (Dr. R. W. Felkin), xxxii, 65.

SPRAGUE (Dr. T. B.). On a Method of Distributing the Surplus among the Assured in a Life Assurance Office, vi, 290, 344. References, T. Marr, xiii, 247; J. R. Macfadyen, xiv, 364.

— On the Grant of Policies without Further Payment in Consideration of Premiums Received, vii, 58. Reference, J. R. Macfadyen, xv, 298.

— On certain Methods of Dividing the Surplus among the Assured in a Life Assurance Company; and on the Rates of Premium that should be Charged to render them Equitable, vii, 61. References, R. Tucker, ix, 245; J. Terry, x, 135; G. J. Lidstone, xxxii, 73; H. W. Andras, xxxii, 320.

— Demonstration of Formula for Value of Reversion to £1, Payable at Death of A (aged x), provided he dies before B (aged y), or within n years after him, vii, 174. Reference, W. C. Otter, vii, 239.

— — On the Terms upon which the Business of one Insurance Company may be Equitably Transferred to another, vii, 301.

— On the Principles which should govern Assurance Companies in amalgamating, vii, 355.

— On the Value of Policies of Assurance in connection with Life Interests, viii, 12. Reference, H. Mountcastle, xv, 148.

— On Formulæ for the Annual Premium for a Term Assurance on Two Joint Lives, viii, 59, 112. References, W.F.B., viii, 110; W. C. Otter, viii, 113; H. A. Smith, viii, 116.

— Demonstration of Formulas for Value of an Endowment Assurance, viii, 111.

SPRAGUE (Dr. T. B.)—continued.

- On Gompertz's Law of Human Mortality, and T. R. Edmonds's Claims to its Independent Discovery and Extension, ix, 288. Mr. Edmonds's Replies, ix, 327, x, 104. Reference, W. S. B. Woolhouse, x, 121.
- On the Recent Imputations made as to Mr. Gompertz's Accuracy, x, 32. Reply by T. R. Edmonds, x, 104.
- Solutions of the Second Year's Institute Examination Questions (1860), x, 45; (1861, 1862, 1863), xiii, 253.
- Demonstration that a Life Annuity is Less than an Annuity-Certain for the Expectation of Life, x, 52, xiii, 381.
- On Certain Methods Proposed for the Valuation of the Liabilities of a Life Assurance Company, xi, 90. References, H. W. Manly, xiv, 252, 258; T. Carr, xiv, 415; Author, xvi, 234*n*; G. King, xx, 264.
- On A. H. Bailey's Estimate of the Liabilities of Certain Life Assurance Companies, xii, 113. Mr. Bailey's Reply, xii, 181.
- On the Limitation of Risks; being an Essay towards the Determination of the maximum Amount of Risk to be retained by a Life Insurance Company on a Single Contingency, xiii, 20. References, Dr. M. Kämmer, xiv, 450, 453; R. P. Hardy, xx, 168.
- On the Value of Annuities payable Half-yearly, Quarterly, &c., xiii, 188, 201, 305. Errata, xviii, 76. Reference, W. S. B. Woolhouse, xv, 98.
- Demonstration of formula for number living according to Makeham's law of mortality, xiii, 353.
- On the value of Apportionable Annuities or of Annuities in which a proportionate part is payable up to the day of death, xiii, 358, xiv, 36. Errata, xv, 244. Reference, T. Carr, xviii, 249.
- "Expectation of Life" (Demonstration that a Life Annuity is less than an Annuity-Certain for the expectation of life), xiii, 381.
- Practical Question: Value of Reversion to a Fund to accumulate till the death of the survivor of four lives, and charged with payment of Annuities to each of the four, and legacies to their issue, xiv, 145.
- On the Valuation of Reversionary Life Interests, xiv, 417. References, Author, xv, 131; J. R. Macfadyen, xxvii, 391; S. G. Warner, xxxi, 284.
- On the value of Reversionary Annuities payable Half-yearly, Quarterly, &c., according to the conditions which prevail in practice, xv, 126. Errata, xviii, 76. References, W. S. B. Woolhouse, xv, 113, xvii, 171; W. Evans, xix, 12.
- On the Rate of Mortality prevailing among Assured Lives, as influenced by the length of time for which they have been assured, xv, 328. References, W. A. Bowser, xvi, 146; J. R. Macfadyen, xvii, 383; G. W. Berridge, xix, 351; G. King, xix, 381; R. R. Tilt, xxxii, 2; T. B. Macaulay, xxxii, 117; Author, xxxii, 197; J. Chatham, xxxv, 236. Explanation of the method of grouping adopted in this paper, xix, 412.
- On the proper method of estimating the Liability of a Life Insurance Company under its policies, xv, 411. References, W. M. Makeham, xv, 449; E. Wright, xvi, 355; D. Deuchar, xviii, 334; J. R. Macfadyen, xix, 158; J. M. McCandlish, xx, 25; J. M. Templeton, xx, 80; W. T. Gray, xx, 312; S. G. Warner, xxxvii, 59, 61.
- On Legislation as to Life Insurance and Life Insurance Companies, xvi, 77. Reference, J. Nicoll, xxxiv, 210.
- Demonstration of a formula by the calculus of operations (expansion of $\frac{d}{dx}$ in a series of powers of ΔD^{-1}), xvi, 116.
- On the Liquidation and Reconstruction of an Insolvent Life Insurance Company, xvi, 229. References, C. J. Bunyon, xvii, 8*n*; G. H. Ryan, xxxii, 27, 34, 35.
- Practical Question: Value of an Annuity on the last survivor of five lives, found by Woolhouse's method of approximation, xvi, 375.
- On Reversionary Life Interests as securities for Loans, xvii, 229.
- Practical Question: Apportionment of estate between 4 joint Tenants, with benefit of survivorship, xviii, 69.

SPRAGUE (Dr. T. B.)—*continued.*

- On the Apportionment, or Division by mutual consent, of a Fund between the Life Tenant and the Reversioner, xviii, 77.
- On Lubbock's Formula for Approximating to the value of a Life Annuity, xviii, 305.
- On the Usefulness of Mathematical Studies to the Actuary. "An Address to the Actuarial Society of Edinburgh," xviii, 403.
- On a Problem occurring in connection with Entailed Estates in Scotland, xix, 38.
- Note on extra risk attaching to the occupation of Pilot, xix, 212.
- Note on the Mortality among Europeans resident in India, xix, 295.
- On the proper mode of measuring the expenses of a Life Insurance Company so as to show the real pressure of the Expenditure on the Bonus-giving power of the Company, xix, 305. Reply on the Discussion, xix, 324. *See also* xix, 417, and Expenses.
- Solution of a Problem in Apportionment. "A father and son, who have successive Life interests in a property, jointly borrow a sum on those interests and a policy on the life of the son. In what proportion should the loan be divided between father and son?" xix, 372.
- Some account of the French General and National Insurance Companies, xix, 435.
- On the Measure of Expenses in Life Insurance Companies, xix, 450. Reference, F. W. Fulford, xxxv, 212.
- On the Premiums for the Insurance of Recently Selected Lives, xx, 95. References, G. King, xx, 212; G. W. Berridge, xx, 276; Author, xxxi, 219.
- Tables of the amounts of Insurances against 1-sue, xx, 152, xxiii, 220, xxvi, 391, xxix, 548. References, G. H. Ryan, xxviii, 382; D. M. Carment, xxxi, 386.
- Does Vaccination afford any protection against Small-pox? xx, 216.
- On the causes of Insolvency in Life Insurance Companies, and the best means of detecting, exposing, and preventing it, xx, 291.
- How does an Increased Mortality affect Policy-Values? xxi, 77. References, J. Sorley, xxi, 200; W. G. Walton, xxii, 136; F. W. White and W. J. H. Whittall, xxiv, 405; J. Chisholm, xxv, 142; Author, xxv, 277; G. H. Ryan, xxvii, 194; G. J. Lidstone, xxxix, 225.
- Remarks on A. H. Bailey's paper on the "Pure Premium Method of Valuation", xxi, 135.
- On the Construction and Use of a series of Select Mortality Tables to be employed in Combination with the $H^{M(5)}$ Table (Part I), Construction, xxi, 229. References, R. Teece, xxii, 250; Author, xxii, 265, 280, 447; G. King, xxii, 446; J. Chatham, xxix, 144; T. G. Ackland, xxix, 181; H. J. Rothery, xxx, 135; (Part II), Construction, xxii, 391; (Part III), Use, xxii, 407. References, Author, xxii, 447, xxiv, 294, xxv, 51, xxvii, 121, xxviii, 356; A. W. Sunderland, xxvi, 59, 366, xxvii, 82; G. H. Ryan, xxvi, 252, xxvii, 103; W. B. Paterson, xxvi, 466; T. G. Ackland, xxvii, 104; H. J. Rothery, xxviii, 483, xxx, 135; J. Chatham, xxxv, 238; J. E. Faulks, xxxv, 257.
- On the Construction of a Combined Marriage and Mortality Table, from Observations made as to the Rates of Marriage and Mortality among any body of Men; and on the calculation of the Values of Annuities and Assurances that depend on the Contingency of Marriage as well as Death, and their Application to determine the Rate of Premium for an Insurance against the Contingency of a Bachelor of a Given Age leaving Issue; Illustrated by various Tables Calculated from the Experience of the British Peerage Families, xxi, 406. References, Author, xxii, 92, 352, 448, xxiii, 127, xxviii, 352; J. Chatham, xxviii, 385, 389, xxix, 103; G. King, xxx, 297; A. Hewat and J. Chatham, xxxi, 440; T. G. Ackland, xxxiii, 194; J. Nicoll, xxxvi, 504.
- On the Adjustment of Probabilities of Marriages or Death, xxi, 445.
- Note on M. B. Pell's paper on the "Institute of Actuaries' Life Tables", xxi, 452.
- Remarks on C. Walford's paper proposing a Register for Declined Lives, xxii, 17.

SPRAGUE (Dr. T. B.)—*continued*.

- On the Rate of Re-Marriage among Widowers, xxii, 77. References, J. Sorley, xxii, 310; T. Y. Strachan, xxvii, 55; Author, xxviii, 353; J. Chatham, xxix, 103; T. G. Ackland, xxxvi, 76.
- On the Application of Lubbock's Formula of Summation to find the value of Annuities and Assurances, xxii, 55. Reference, G. King, xxvi, 276.
- On the Probability that there will hereafter be issue of a Marriage hitherto childless, xxii, 117. Reference, Author, xxv, 160.
- On C. Walford's paper on the "Position of Life and other Insurance Associations in relation to their Local Medical Examiner", xxii, 184.
- Remarks on R. Teece's paper on the "Reserve that should be made for Policies on Recently Assured Lives", xxii, 265. Reference, J. Chatham, xxviii, 389, xxix, 143.
- Explanation of a New Formula for Interpolation, xxii, 270.
- On the Rates of Marriage among Widows and Spinsters, xxii, 352. Reference (Editorial), xxiii, 127.
- On the Probability that a Marriage Entered into by a Man above Forty will be fruitful, xxii, 359. Reference, Author, xxviii, 352.
- Presidential Address (November 1882), xxiv, 1.
- On the Grant of Settlement Policies under the Provisions of the "Married Women's Property Acts, 1870 and 1882", xxiv, 77. References, C. J. Bunyon, xxiv, 82; R. Teece, xxv, 362; W. K. Lemon, xxix, 384.
- Presidential Address (November 1883), xxiv, 229.
- Note on W. T. Gray's paper on the "Effect of Withdrawals on Mortality", xxiv, 293.
- On the Calculation of the Values of Benefits that depend on the Death Without Issue of One or More Persons, xxiv, 327.
- Some Remarks on the Application of the Principle of Non-Forfeiture to Ordinary Policies, xxiv, 359. Reference, F. W. Fulford, xxxv, 204.
- On the Rate of Mortality in the Navy, xxv, 49. References, H. J. Rothery, xxviii, 474; J. J. McLauchlan, xxxiv, 253, 258.
- Presidential Address (November 1884), xxv, 65. References, A. G. Mackenzie, xxix, 200; J. Nicoll, xxxiv, 212; J. Burn, xxxiv, 492.
- On the Probability that a Marriage entered into at any age will be fruitful; and that if a Marriage has been childless for several years, it will afterwards become fruitful, xxv, 160.
- J. C. Hopkinson's Solution of the Problem

$$\left[\text{If } \frac{1+a_x}{1+a_{x+1}} > \frac{1+a'_x}{1+a'_{x+1}} > 1, \right.$$

$$\text{then will } \frac{a_x}{x(1+a_x)} > \left(\frac{1}{1+a'_x} - \frac{1}{1+a_x} \right) \frac{1}{x-x'} \Big], \text{ xxv, 277.}$$
- Presidential Address (November 1885), xxv, 293.
- On the Expressions "Asset" and "Outgo", xxv, 366.
- On the Rate of Mortality among Europeans in Tropical Africa, xxv, 437. Reference, A. E. Sprague, xxxiii, 285.
- The Graphic Method of adjusting Mortality Tables, a description of its objects and advantages as compared with other Methods, and an application of it to obtain a Graduated Mortality Table from A. J. Finlaison's observations on the Mortality of the Female Government Annuitants, four years and upwards after purchase, xxvi, 77. References, W. S. B. Woolhouse, xxvi, 420, xxix, 236; Author, xxvi, 477, xxix, 60; J. Chatham, xxvii, 44, xxix, 106, xxxvii, 526; O. Schjoll, xxviii, 93; A. Hewat and J. Chatham, xxxi, 438.
- Further Remarks on the Valuation of Reversionary Life Interests, xxvii, 107; References, A. W. Sunderland, xxvii, 220; H. E. Nightingale, xxx, 16; J. E. Faulks, xxxv, 257.
- The Rate of Mortality among Jews in the Pole Star (Nordstjernen) Life Insurance Company, xxvii, 155.
- On the probability that a Marriage entered into by a Man at any age will be fruitful, xxvii, 195. Reference, Author, xxviii, 354.
- Expenditure in Life Assurance Offices (reprinted from the *Insurance Record*), xxviii, 149. Reference, H. R. Harding, xxviii, 136.

SPRAGUE (Dr. T. B.)—*continued.*

- Letter on the Income Tax (reprinted from the *Insurance Record*), xxviii, 310.
- On the Premiums for Insurance against issue to Widowers, Bachelors and Married Men ; or on the Calculation of the Values of Benefits Depending on Marriage and on Birth of Issue, xxviii, 350.
- Further Remarks on Woolhouse's Method of Graduation with a new Adjustment of the $HM^{(9)}$ Table by the Graphic Method, xxix, 59. Reference, W. S. B. Woolhouse, xxix, 236.
- Final Remarks on Woolhouse's Method of Graduation, with a Numerical Example showing how far it distorts the Law of a perfectly graduated series of Numbers, xxix, 232. Reference, J. A. Higham, xxxi, 320.
- On "Current Age", xxix, 478. Reference, Author, xxxi, 218.
- "Case and Opinion regarding the Value of the Life Interest of a Lady in a Reversion expectant on her own death", xxix, 540. Reference, J. R. Hart, xxxii, 55, 460.
- On the Opinion of the late Dr. Whewell as to the Graphic Method, xxx, 161.
- On the Tabulation of the facts extracted from the Records of a Life Office for the purpose of investigating its Mortality Experience, xxxi, 205. References, J. Meikle, xxxi, 229; T. G. Ackland, xxxiii, 70, 84, 88, 94, 132, 168.
- The Treatment of the Discontinuances in the British Offices' Experience, 1863-1893 (Extracts from *Insurance Record*), xxxi, 311. Reference, T. G. Ackland, xxxiii, 84.
- Maximum Mortality Percentages, xxxii, 197. Reference, A. D. Besant, xxxv, 234.
- On Lost Policies, Certified Copy Policies, Certificates of Title, Possession of a Policy, Notice, Bankruptcy, and some other practical considerations with regard to the titles to policies, xxxiii, 373.
- Editorial Remarks:—
 - Policies of Assurance Act, xiv, 46.
 - Conditions of Assurance, xiv, 102.
 - The Sales of Reversions Act, 1867, xiv, 106.
 - As to the Value of a benefit increasing in a geometrical ratio, xiv, 199.
 - Eighth Annual Report of the Superintendent of the Insurance Department, State of New York, xiv, 226.
 - The Mutual Life Insurance Company of New York, xiv, 322.
 - Comments on M. B. Pell's paper on the Distribution of Profits, xiv, 382.
 - Description of his method of dividing profits among the policyholders of an office, xiv, 396. References, G. J. Lidstone, xxxii, 74; T. E. Young, xxxvii, 48.
 - Thirteenth Annual Report of the Insurance Commissioner of the Commonwealth of Massachusetts, 1868, Life and Accident Insurance, xv, 31.
 - On Dr. A. Wiegand's paper on the Antagonism between Theory and Practice, xv, 30.
 - Legislation concerning Insurance Companies in Germany, xv, 270.
 - On the Liquidation of an Insolvent Life Office, xv, 388.
 - On E. Sang's "Mechanical Aids to Calculation", xvi, 254, 265.
 - W. Barnes's Report on the position and prospects of the Life Association of America, xvi, 358.
 - Woolhouse's "Philosophy of Statistics", xvii, 191.
 - Note on a Method (suggested by W. Godward) of finding the value of an Annuity on the last survivor of three lives, xvii, 266. *See also* E. Smyth, xvii, 379.
 - On the notice by the *Moniteur des Assurances* of "Life Insurance in 1872", xvii, 296, 297.
 - Note on the formula connecting the value of the force of mortality with the chance of dying in a year, xvii, 332.
 - Note as to the Expense of New Business, xviii, 342.
 - As to the practice of the Twenty Offices with regard to policies not taken up, xix, 406.
 - Form of procedure in appointing Trustee under the "Married Women's Property Act", xx, 298.

SPRAGUE (Dr. T. B.). Editorial Remarks—continued.

- — On "Life Insurance and Suicide", xx, 354.
- — Who invented the Symbol d_x ? xxi, 296.
- — Formula for Force of Mortality, xxii, 232.
- — Influence of Marriage on Mortality among Males and Females, xxii, 241.
- — Influence of Marriage on the Death-Rate, xxiii, 40.
- — Issue Insurances, xxiii, 220.
- — Insolvent Life Offices, xxiii, 308.

Reviews:—

- — On the Report of the Medical Director (Dr. T. A. Foster) of the Union Mutual Life Assurance Company, Portland, Maine, upon the death losses for the eight years ending December 1894, xxv, 251.
- — Mortality Experience of the Provident Life and Trust Company of Philadelphia, 1866 to 1885, prepared by A. S. Wing, xxvi, 316. Reference, G. H. Ryan, xxviii, 220.
- — The Pole Star Life Insurance Company of Stockholm, its Operations during the First Fifteen Years of its Existence, xxvi, 471.

Translations:—

- — Dr. C. Bremiker's paper on the Risk attaching to the Grant of Life Assurances, xvi, 216, 285.
- — Dr. T. N. Thiele's Treatise on a Mathematical Formula to express the rate of mortality throughout the whole of life, xvi, 313.
- — Dr. T. Wittstein's Treatise on Mathematical Statistics and its application to Political Economy and Insurance, xvii, 178, 355, 417.
- — W. Lazarus's Rates of Mortality, and their causes, xviii, 54, 212.
- — "Annuities." (Ninth edition of the *Encyclopædia Britannica*.) Review by W. Sutton, xx, 112.
- — "Life Insurance in 1872." Review by V. Senés, xvii, 291. References, W. Sutton, xxviii, 173; A. G. McKenzie, xxix, 192.
- — "Treatise on Life Insurance Accounts." Reference, A. G. McKenzie, xxix, 188.
- — "Select Life Tables." Reference, F. W. Fulford, xxxv, 217.
- — "On Probability and Chance, and their connection with Insurance." Review by G. F. Hardy, xxxi, 315.
- — Extracts from Letters to the *Insurance Record* on the Measure of Expenses in Life Assurance Companies, xix, 167.
- — Extracts from his opinion to the Australian Mutual Provident Society, xix, 170. See also **Expenses**.
- — On a Question in Probabilities ("A says that B says that a certain event took place; required the Probability that the event did take place, p_1 and p_2 being A's and B's respective probabilities of speaking the truth"), xxi, 204. Reference, A. Macfarlane, xxii, 356. See also **Prof. A. Cayley and W. S. B. Woolhouse**.
- — Correspondence in the *Insurance Record* on A. H. Bailey's paper, "Pure Premium Method of Valuation", xxii, 43.
- — Report to Court of Session in Dalchosnie Disentail Case, xxiii, 79, 87, 107, 110.
- — Succeeds C. Jellicoe as Editor of the *Journal*, xiii, 386.
- — Reference to his services as Editor, and to his preparation of a scheme of notation, S. Brown, xv, 167.
- — Resignation of Editorship of *Journal*, 1883, xxiv, 149.
- — "Index to the First Twenty Volumes of the *Journal*." Reference, xxiv, 149.
- — Offer of Prize for Essay. See **Institute of Actuaries**.
- — Bust placed in the Hall of the Institute of Actuaries. Reference, C. D. Higham, xxxvii, 111.

SPRAGUE (Dr. T. B.) and KING (G.). On the Valuation of Policies subject to Half-Yearly and Quarterly Premiums, xxiii, 256. References, T. B. Sprague, xxiii, 264; J. Chisholm, xxv, 154; T. J. Searle, xxx, 514.

SPRAGUE (Dr. T. B.) and WILLIAMS (J. HILL). Translation of F. Maurice's Essay on Interpolation, xiv, 1.

— Translation of W. Lazarus's Paper on some Problems in the Theory of Probabilities, xv, 245.

'SPURIOUS SELECTION.' W. P. Elderton, xl, 221, 309; J. Bacon, xl, 304.

- STABLER (E. L.).** On Makeham's Theory of Inverse Probabilities, xxx, 239. Errata, xxx, 580.
- STAFF PENSION FUNDS.** See *Pension Funds*.
- STAMP DUTIES,** Upon Assignments of Policies of Assurance, C. J. Bunyon, i, 71*.
- On Life Policies, iv, 22.
- On Re-assurance Policies (if under hand), E. Colquhoun, xxviii, 166; (if under seal), (Editorial), xxviii, 167.
- In connection with Policies of Life Assurance, A. R. Barrand, xxxiii, 226.
- On Sinking Fund Assurance Policies (under hand and under seal), J. E. Faulks, xxxiv, 572.
- On Debentures, J. E. Faulks, xxxv, 151.
- On Policies of Insurance under the Workmen's Compensation Act, 1897, J. Nicoll, xxxvi, 513.
- STAMPS ACT,** Cape of Good Hope, 1898 (Extracts), xxxv, 383.
- STANDARD LIFE OFFICE,** Report on the Causes of Death in the, Sir R. Christison, xix, 59.
- Mortality Experience of, G. F. Hardy and H. J. Rothery, xxvii, 163.
- STANLEY (Sir H. M.).** Vaccination and Small Pox in Africa, xxxvii, 292.
- STAPLE INN,** History of, A. Day, xxvii, 1.
- Removal of Head Quarters of the Institute to, xxvi, 406.
- STARK (Dr. J.).** Remarks as to the Influence of Marriage on the Death Rates of Males and Females (abridged from Letters to the Registrar-General of Births, Deaths, and Marriages in Scotland), xxii, 233. References. T. B. Sprague, xxii, 448; H. Spencer, R. A. Proctor and Dr. W. Robertson, xxiii, 40.
- STATE STANDARD OF SOLVENCY.** See *Valuation of Life Policies (3.)*.
- STATE SUPERVISION IN INSURANCE.** Editorial, xiv, 226; T. B. Sprague, xvi, 77; R. Teece, xxv, 350. References (Editorial), xxvi, 24; G. King, xxix, 481, 497.
- STATISTICAL CONGRESSES.** See *International Statistical Congresses*.
- STATISTICS,** (Social), On the Uniform action of the Human Will, as exhibited by its mean results in, S. Brown, ii, 341, iii, 17.
- On a Test for ascertaining whether an observed Degree of Uniformity or the Reverse in Tables of Statistics is to be looked upon as remarkable, R. Campbell, viii, 316. Reference, Author, ix, 216.
- Philosophy of, W. S. B. Woolhouse, xvii, 37.
- (Mathematical), and its application to political Economy and Insurance, Dr. T. Wittstein, xvii, 178. Translated by T. B. Sprague, xvii, 355, 417.
- Application of the Binomial Law to Statistical Enquiries, S. Brown, xvii, 340.
- "Social, Political, and Medical, Studies in", (G. B. Longstaff). *Review* by A. F. Burridge, xxix, 459.
- "Elements of" (A. L. Bowley). *Review* by J. Holliday, xxxvi, 197.
- STATISTICS OF HUMAN LIFE** (Paragraph from Weekly paper), x, 237.
- STATUS OF AN ANNUITY,** Definition, P. Gray, ii, 2; T. Weddle, xiii, 224n.
- STEPHENSON (J. W.).** On the Tables of Deferred Annuities published by the National Debt Office, x, 44, xii, 178, 302, xiii, 114.
- "On the Value of Options" (reply to W. M. Makeham), x, 144, xii, 178, 302, xiii, 114. References, W. M. Makeham, xii, 233, 363, xiii, 109; M. N. Adler, xii, 267; S. Younger, xiii, 55, 118; H. A. Smith, xiii, 103; P. Gray, xiii, 104.
- STEWART (JOHN).** A Method of Approximating to the Effect of a Reduction in the Rate of Interest used in Calculating Reserves under Whole-Life Policies; with Tables, xxxii, 260.
- STIRLING (J.).** Deferred Assurances with Returnable Premiums, xxxi, 259.
- STIRLING'S THEOREM** for the Value of $\log(1, 2, 3, \dots, x-1)$, On the Use of, P. Gray, xii, 214.
- STOTT (J.).** On the Mortality among Innkeepers, Publicans, and other Persons engaged in the Sale of Intoxicating Liquors: being the Experience of the Scottish Amicable Life Assurance Society during Fifty Years (1826-1876), xx, 35.

STOTT (J.)—*continued.*

— On the Death Rate among Assured Lives in the West Indies: being the Experience of the Scottish Amicable Life Assurance Society during Thirty Years (1846-76), xxi, 153. Reference, G. F. Hardy and H. J. Rothery, xxvii, 161.

STOTT (W.) and HUME (A. S.). Tables for the Valuation of Whole-Term Policies, with Limited Number of Premiums, HM 3 per-cent, xxxiv, 397-412.

— Annual Premiums, at HM 3 per-cent, for Endowment Assurances on Two Joint Lives (Text-Book Graduation), xxxvi, 393-398.

— On the Calculation of Contingent Assurance Premiums when Makeham's Law holds, xxxix, 370.

STRACHAN (T. Y.). Statistics of Mortality and Accidents among Miners, and of Re-Marriages among their Widows. (Extracted from the Report to the Northumberland and Durham Miners' Permanent Relief Fund), xxvii, 48.

— Table bearing upon Expenditure in Life Offices, xxviii, 141.

STRONG (W. R.). Review:—

— "The Simplification of Calculations by Mechanical and Graphical Processes", by M. d'Ocagne, xxxix, 377.

STRONG (W. R.) and YOUNG (T. E.). Reviews:—

— "Mortality Experience of the Gotha Life Office (1829-1878)", xxxviii, 292.

— "The Amendment of the Basis of Calculation of the Gotha Life Office", by Dr. J. Karup, xxxviii, 373.

STÜSSI (H.). On the Mortality of the Clergy, xviii, 343.

SUCCESSIVE LIVES, The Doctrine of, P. Gray, ii, 1, 271; A. De Morgan, iv, 278; T. Weddle, xiii, 221.

SUICIDE, R. T. Jopling, i, 308, ii, 32; S. Brown, ii, 350; Dr. J. W. Eastwood, xx, 349; H. C. Thiselton, xxxi, 35.

— In Berlin (1849-50), ii, 292.

— Experience of Gotha Life Office, vi, 11.

SUMMATION, W. Orchard, i, 9*.

— Of a Compound Series, and its Application to a Problem in Probabilities, Bishop Terrot, v, 1.

— Interpolation, and the Adjustment of Numerical Tables, W. S. B. Woolhouse, xi, 61, 301, xii, 136.

— Of Divergent Series, A. De Morgan, xii, 245.

— (Approximate), Formulas for, G. F. Hardy, xxiv, 95; (for Double Integration), xxvi, 294; W. S. B. Woolhouse, xxvii, 122; A. W. Sunderland, xxvii, 509.

— Calculation of the Values of Complex Benefits by means of Formulas of, G. King, xxvi, 276.

— On an alternative type of Formula for, W. P. Elderton, xl, 116.

— Lubbock's Formula: its Application to Find the Value of Annuities and Assurances, T. B. Sprague, xxii, 55; G. King, xxvi, 276, 289.

— Maclaurin's Formula, G. F. Hardy, xxiv, 95; G. King, xxviii, 214.

— Stirling's Formula, G. F. Hardy, xxvii, 216.

— Graduation Formulas, G. F. Hardy, xxxii, 371; R. Todhunter, xxxii, 378.

— The Use of Quadrature Formulæ and other Methods of Approximation for the Calculation of Survivorship Benefits, J. Buchanan, xxxvii, 384.

SUNDERLAND (A. W.). Premiums for Contingent Assurance, xxvi, 58.

— On Bonuses arising from Surplus Premiums and Surplus Interest, xxvi, 357, xxviii, 257, 259, 279. Reference, H. W. Andras, xxxii, 320.

— On Risk Premiums for Survivorship Assurances, xxvii, 81. References, T. G. Ackland, xxvii, 157; H. E. Nightingale, xxx, 14.

— Reversionary Life Interests, xxvii, 220.

— The Calculation of Survivorship Premiums, xxvii, 509.

— Bonuses on Endowment Assurance Policies, xxviii, 257. References, W. Sutton, xxviii, 417; A. F. BurrIDGE, xxx, 153; J. Chatham, xxxii, 416.

— On a Method frequently adopted of treating Under-Average Lives for Assurance purposes, by making Temporary deductions from the sums assured, xxix, 419. References, B. Newbatt, xxxi, 19; D. Carment, xxxi, 72; G. F. Hardy, xxxii, 153, 157, 184; A. W. Tarn, xxxiv, 539.

— "Notes on Finite Differences." (*Notice of Publication*), xxv, 368.

SUPERANNUATION in Friendly Societies, S. Brown, xxv, 42. *See also* G. F. Hardy, xxvii, 245; A. W. Watson, xxxv, 274; G. H. Ryan, xxxv, 324.

SUPERANNUATION BILL, School Board for London. Reference, G. H. Ryan, xxxi, 470.

SUPERANNUATION FUNDS. *See Pension Funds.*

SURPLUS, Determination of, C. Jellicoe, i, 22*, 159, iii, 185, x, 328; C. Gill, i, 357; J. Marshall, iv, 46; S. Younger, iv, 249; J. Meikle, xi, 251; J. M. McCandlish, xx, 12.

— **Distribution of**, C. Jellicoe, i, 22*, 159, ii, 333, iii, 185, x, 328; J. Marshall, iv, 46; H. Wilbraham, vi, 278; T. B. Sprague, vi, 290, 344, vii, 61, 396; W. P. Pattison, ix, 341; S. Homans, xi, 121. Remarks on S. Homans' plan (Editorial), xiv, 326, xv, 48; J. Meikle, xi, 251; M. B. Pell, xiv, 382; H. W. Manly, xxiii, 233; H. J. Rothery, xxx, 133; T. G. C. Browne, xxx, 147, xxxii, 115; D. Carment, xxx, 232; H. C. Threlton, xxxi, 42; G. J. Lidstone, xxxii, 73; G. King, xxxii, 108; G. F. Hardy, xxxii, 112; H. W. Andras, xxxii, 320; J. Chatham, xxxii, 393; G. H. Ryan, xxxviii, 69. In the Colonies, A. W. Tarn, xxxiv, 541. In America, W. A. Hutcheson, xxxvii, 99.

— On the conditions which give rise to, C. Jellicoe, ii, 333.

— On the character of certain methods adopted for the Determination and Division of, C. Jellicoe, iii, 185.

— On the rates of premium required to provide certain periodical returns to the assured, R. Tucker, ix, 245. *See also* T. B. Sprague, vii, 61.

— On the tendency of some systems of distribution to defeat the object of life assurance, J. Terry, x, 130.

— Formula for returning to the assured their contributions to, C. J. Harvey, xxiv, 173.

— Its application to converting Whole-Life Policies into Endowment Assurances, H. W. Manly, xxvii, 362.

— In relation to Office Premiums and Modes of Valuation, H. J. Rothery, xxx, 131.

— T. G. C. Browne's Method of Division of Profits (Reprinted from the *Insurance Record*), xxxii, 194.

— A few Notes upon Certain Methods of Allotment, T. E. Young, xxxvii, 46.

See also Bonus and Bonuses.

SURRENDER VALUES OF POLICIES, J. A. Higham, i, 195; C. Jellicoe, i, 279, viii, 315n; E. Sang, i, 293; *United States Assurance Gazette*, vi, 292; W. D. Biden, x, 322; A. De Morgan (Quoted by M. N. Adler), xii, 25; S. Younger, xv, 151; J. R. Macfadyen, xvii, 381; G. S. Crisford (*Messenger Prize Essay*), xxi, 301; G. W. Berridge, xxii, 446; G. F. Hardy, xxiii, 9; T. B. Sprague, xxiv, 365; G. H. Ryan, xxxii, 26; F. W. Fulford, xxxv, 199.

— Discounted Bonus Policies, H. Moir, xxxvi, 31; G. King, xxxvi, 42.

— Application of Surrender Values, to keeping Policies in Force, T. B. Sprague, xxiv, 359.

— In Extra Risk Assurances, G. H. Ryan, xxiv, 38; C. J. Bunyon, xxiv, 40; T. B. Sprague, xxiv, 43.

— Settlement Policies, W. Hughes, xxvii, 66.

— Rated-up Lives, D. Carment, xxx, 221.

— Sinking Fund Assurances, J. E. Faulks, xxxiv, 570.

See also Paid-up Policies.

SURVIVORSHIP, Between two lives, On the true measure of probability of, P. Gray, i, 137.

— Method of Calculating Probability of, D. Chisholm, ii, 305.

— Probabilities of, T. G. Aekland, xxvii, 157.

— Benefit of, in Reversions, G. King, xxvi, 288; D. A. Bumsted, xxvi, 297; G. H. Ryan, xxvi, 298; A. W. Sunderland, xxvi, 299.

SURVIVORSHIP ANNUITIES, L. W. Meech, xxxii, 71.

— On the Calculation of them by the Columnar Method, J. Meikle, xi, 40.

— Annual Premiums for, P. Gray, xxi, 67.

— On the Approximate Evaluation of the Integral for \bar{a}_{yz}^1 , R. Todhunter, xxxiii, 311.

— (Compound), G. F. Hardy, xxxiv, 93.

SURVIVORSHIP ASSURANCES.

- Subject to certain limitations (x against y and n years longer). P. Hardy, ii, 91, iv, 134; R. Tucker, iv, 251; T. B. Sprague, vii, 174; W. C. Otter, vii, 239; J. Chatham, xxv, 439; A. W. Sunderland, xxvi, 58.
- The Construction of Tables for, D. Chisholm, ii, 305; P. Gray, v, 107.
- Approximate method for calculating the premium on one life against another and for n years longer. (Editorial Remarks) iv, 134.
- On the use of D. Chisholm's Survivorship Assurance Tables, J. Meikle, vii, 297.
- On a new Method of Calculating Value of, E. Réboul, ix, 1.
- On the approximate expression for, A. H. Bailey, ix, 299.
- (Compound), Assurance Problems, Solutions, W. M. Makeham, ix, 361, x, 241, xii, 61, 118. Reply by W. B. Hodge, xii, 182.
- (Term), On an expression for, H. A. Smith, ix, 295.
- On Premiums for, T. B. Sprague, xxii, 397; A. W. Sunderland, xxvi, 58.
- Extra Premiums for, G. H. Ryan, xxiv, 314; R. P. Hardy, xxiv, 320, G. F. Hardy, xxiv, 323.
- Payable on the death of x without issue provided y survive, T. B. Sprague, xxiv, 328.
- Calculated by Formulas of Summation, G. King, xxvi, 280.
- On Risk Premiums for, A. W. Sunderland, xxvii, 81.
- Approximate calculation of Premiums for, A. W. Sunderland, xxvii, 509.
- With Returnable Premium, G. J. Lidstone, xxviii, 250.
- On the application of Makeham's Modification of Gompertz's Expression for the Law of Mortality to the Practical Calculation of the Values of, F. E. Colenso, xxxi, 337.
- On the calculation of, F. E. Colenso, xxxii, 185.
- On the solution of a general problem relating to, G. J. Lidstone, xxxv, 480.
- The use of Quadrature Formulæ and other Methods of Approximation for the Calculation of, J. Buchanan, xxxvii, 384.
- On the calculation of premiums for, when Makeham's Law holds. A. S. Hume and W. Stott, xxxix, 370.

See also **Summation** (Approximate).

SUSPENDED MORTALITY, G. F. Hardy, xxxvii, 185.

SÜSSMILCH (J. P.). Table of Mortality, i, 5, 15.

— Historical Notice of him, F. Hendriks, i, 19.

SUTTON (W.). Demonstration of a Formula in J. A. Higham's paper on Selection, xv, 158.

— On W. S. B. Woodhouse's Improved Theory of Annuities and Assurances, xv, 307.

— On W. Lazarus's paper on some Problems in Probabilities, xv, 452, xvi, 151.

— On the New Experience (or Institute of Actuaries') Mortality Observations, xvi, 75.

— Course of Three Lectures at the Institute of Actuaries. No. 1: Theory of Logarithms, Elements of Theory of Probabilities, Compound Interest; No. 2: Tables of Mortality, Construction of Auxiliary Tables; No. 3: Annuities and Assurances on Lives, ditto on Survivorships, Miscellaneous Questions, xvi, 434.

— On the Relation between the Value of a Policy and the Rate of Interest, xvii, 227.

— On the Relation between Net Premium and the Rate of Interest, xvii, 416.

— On the Method used by Dr. Price in the Construction of the Northampton Mortality Table, xviii, 107.

— On the Formula used by C. Jellicoe in the Graduation of the Eagle Insurance Company's Experience, xviii, 375.

— On the Rate of Interest yielded by Foreign Government Loans, xix, 77.

SUTTON (W.)—*continued.*

- A Comparison of various Methods of Graduation of a Mortality Table, considered in reference to the valuation of the Liability of an Average Life Office under its Assurance Contracts, Part I, xx, 170. Part II, on the Determination of an Average Life Office, xx, 192. Reference, G. King, xx, 300.
- Policy Year and Calendar Year Methods, xxi, 255. Reference, W. J. H. Whittall, xxxi, 192.
- On the Method used by Milne in the Construction of the Carlisle Table of Mortality, xxiv, 110. *See also* G. King, xxiv, 186.
- Errata in the "Institute of Actuaries' Text-Book, Part I", xxv, 63.
- The Actuarial Certification of Annuity Tables under "The Friendly Societies Act, 1875", xxvi, 225.
- Presidential Address (November 1888), xxvii, 349.
- Notes for the use of the Select Committee of the House of Commons on Friendly Societies, under Section 30 of "The Friendly Societies Act" and Industrial Assurance Companies, xxvii, 411.
- Presidential Address (November 1889), xxviii, 169.
- On the Assessment Scheme of Life Insurance, xxviii, 417.
- Review:—
- T. B. Sprague's Article "Annuities" in the ninth edition of the *Encyclopædia Britannica*, xx, 112.
- Report on the Sickness and Mortality Experience of Friendly Societies in England and Wales. *Review* by G. F. Hardy, xxxiii, 268. Reference, A. W. Watson, xxxv, 268.

SWITZERLAND. *See* Foreign Intelligence.**"SYDNEY MORNING HERALD",** Extract from:—

- On the Distribution of Profits in Mutual Insurance Societies, M. B. Pell, xiv, 382.

SYLVESTER (Prof. J. J.). On Multiplication by a Table of Single Entry, iv, 236. Reference, A. Levine, xxxiii, 346.

- "Theory of the Conjugate Relations of Two Rational Integral Functions" (extracted from the Proceedings of the Royal Society). *Review* and *Analysis*, iv, 142.

- On his Mathematical Lectures, E. J. Farren, viii, 237.

- Obituary notice of, A. Levine, xxxiii, 345.

SYMBOLS adopted by the Joint Committee for the British Offices' Life Tables, 1893, xxxviii, 97.**SYPHILIS** as affecting Life Insurance Risks, Dr. E. J. Marsh, xxxii, 206.**"SYSTEM AND TABLES OF LIFE INSURANCE"** (L. W. Meech). References, G. H. Ryan, xxiv, 288; T. G. Ackland, xxiv, 289; T. B. Sprague, xxiv, 294; J. Chatham, xxix, 120; F. E. Colenso, xxxi, 338; R. R. Tilt, xxxii, 9.

- Errata and Addenda, xxxii, 71.

See also Final Series.**"TABLE OF QUARTER-SQUARES"** (S. L. Laundry). *Review*, vi, 234.**"TABLES** for finding the Values of Policies of all durations according to any Table of Mortality or any Rate of Interest" (J. Chisholm) (*Notice of Publication*), xxv, 368. *See also* J. Chisholm.**TARN (A. W.).** The Enfranchisement of Leaseholds and the Taxation of Ground Rents, Chief Rents, and Kindred Charges on Land in England and Wales (Samuel Brown Prize Essay, 1892), xxx, 345. Errata, xxx, 580.

- Some Notes on Life Assurance in Greater Britain, particularly with reference to the Work and Development of the Native Offices, xxxiv, 517. Errata, xxxvi, 208.

TASMANIA, Life Assurance Companies Act, 1874 (Extracts), xx, 441.

- Rate of Mortality from various classes of Diseases in 1873, A. F. BurrIDGE, xxiii, 314.

See also Colonial Intelligence.**TAXATION (Direct).** On the principles by which it should be regulated, C. Jellicoe, ii, 213.

- On the true Measure of Liability in a System of, C. Jellicoe, iii, 1.

See also Income Tax.

- TAYLOR'S THEOREM.** W. S. B. Woodhouse, xxi, 57, xxvii, 123; G. King, xxviii, 214. *See also* Maclaurin's Formula of Summation.
- TEECE (R.).** On the Reserve that should be made for Policies on recently Assured Lives, xxii, 250; References, T. B. Sprague, xxii, 264; G. H. Ryan, xxvi, 252, xxx, 200; A. W. Tarn, xxxiv, 541.
- **State Supervision in Insurance**, xxv, 350. References (Editorial), xxvi, 24; G. King, xxix, 481.
- **The Increase of Cancer**, xxxvi, 89.
- TEMPERANCE and Life Assurance.** *See* Abstainers.
- TEMPLETON (Col. J. M.), C.M.G.,** On Mutual Life Assurance; its aims and objects, and the means of attaining them, xx, 77. Reference, W. T. Gray, xx, 309. *See also* xx, 53.
- TEMPORARY ANNUITY.** Market Value of, J. R. Macfadyen, xix, 141.
- TEMPORARY ASSURANCES,** In the 17th Century, F. Hendriks, ii, 227.
- **British Offices' Life Tables**, 1893, xxxvii, 129.
- **W. P. Elderton**, xxxvii, 501.
- TEMPORARY DEDUCTIONS** from Sum Assured in lieu of Extra Premiums. *See* Extra Premiums.
- TEMPORARY LIFE ANNUITY and Annuity-Certain,** On the relation between, G. F. Hardy, xxxiv, 85.
- TERM ASSURANCE,** On Two Joint Lives, Formula for, T. B. Sprague, viii, 59; W. F. B., viii, 110; W. C. Otter, viii, 113.
- **Life against life**, H. A. Smith, ix, 295.
- **On the D and N formula for it**, H. A. Smith, xix, 143.
- TERROT (Bishop).** On the Summation of a Compound Series, and its application to a Problem in Probabilities (from the Transactions of the Royal Society of Edinburgh), v, 1.
- TERRY (J.).** On the Tendency of some systems of Distribution of Surplus to defeat the object of Life Assurance, x, 130.
- TETENS (J. N.).** Description of his Treatise and Tables, F. Hendriks, i, 1. References, A. De Morgan, iv, 196; Dr. M. Kanner, xiv, 450.
- TEXT BOOK (Institute of Actuaries'),**
- Part I by W. Sutton, Announcement of Publication, xxiv, 149; Errata, xxv, 63.
- **New Edition** by R. Todhunter. *Review* by A. Levine, xxxvi, 385.
- Part II by G. King, Announcement of Publication, xxvii, 238; Errata, Author, xxvii, 120, xxviii, 160, xxix, 80. References, T. G. Ackland, xxvii, 158; Report of Council, xxvii, 238; W. Sutton, xxvii, 350; W. M. Makeham, xxviii, 154; G. J. Lidstone, xxviii, 250; H. C. Threlton, xxviii, 487; T. J. Searle, xxx, 557; I. C. Pierson, xxxiii, 34; H. P. Calderon, xxxv, 159.
- **Second Edition.** *Review* by R. Todhunter, xxxvii, 104.
- **French Edition** by MM. Bégault, Le Jeune and Mahillon, xxx, 576; Announcement of Publication, xxxii, 145.
- See also* Institute of Actuaries.
- THEORY OF ANNUITIES AND ASSURANCES.** *See* Annuities and Assurances.
- THEORY OF COMBINATIONS.** *See* Combinations.
- "THEORY OF COMPOUND INTEREST AND ANNUITIES"** (F. Thoman). *Review*, viii, 350.
- THEORY OF ERRORS,** A. De Morgan, x, 249; Sir J. F. W. Herschel, xv, 179; W. S. B. Woodhouse, xvii, 45, xxi, 61, xxvi, 421, xxix, 241; C. F. McCay, xxii, 29; G. F. Hardy, xxiii, 17, xxvii, 214, 321; W. M. Makeham, xxviii, 323, 331, 393; H. P. Calderon, xxxv, 170. *See also* Probabilities.
- THEORY OF LIFE CONTINGENCIES,** Contributions to the History of, F. Hendriks, ii, 121, 222, iii, 93.
- **On some Considerations in the**, P. Hardy, ii, 151, 259.
- THEORY OF LOGARITHMS.** *See* Logarithms.
- "THEORY OF THE CONJUGATE RELATIONS OF TWO RATIONAL INTEGRAL FUNCTIONS"** (J. J. Sylvester). *Review and Analysis*, iv, 142.

- THIELE (Dr. T. N.).** Adjusted Table of Mortality; British Peerage Females, xvi, 43, 118.
- On a Mathematical Formula to express the rate of Mortality throughout the whole of Life, tested by a series of Observations made use of by the Danish Life Insurance Company of 1871, Translated by T. B. Sprague, xvi, 313. Erratum, xvi, 461.
- On Life Insurance Legislation in Denmark, xxxvii, 54.
- THIRTY AMERICAN OFFICES,** Experience of. References, G. H. Ryan, xxviii, 221; J. Chatham, xxix, 142; F. E. Colenso, xxxi, 338, 349; R. R. Tilt, xxxii, 9. Errata and addenda, L. W. Meech, xxxii, 71. See also **Final Series and "System and Tables of Life Insurance."**
- THISELTON (H. C.).** On Hypothetical and net Policy Values, xxviii, 187.
- A Discussion of some points of Life Assurance Administration in respect of which Divergence of Practice exists: A Plea for Uniformity, xxxi, 28.
- THOMAN (F.).** "Theory of Compound Interest and Annuities, &c.," *Review*, viii, 350.
- THOMAS (E. C.).** Staff Pension Funds; On the Construction of Columns for obtaining the Value of the Return, on Death or Withdrawal, of the Total Contributions (based on Salary) with Compound Interest at rate j per annum, discounted at rate i per annum, xxxviii, 276.
- Staff Pension Funds. Formula for special Death Benefit, xxxix, 206.
- On some Special Features of Widows' and Orphans' Funds, xl, 188.
- THOMAS (E. C.) and MANLY (H. W.).** On the Valuation of Staff Pension Funds, xxxvi, 209. Errata, xxxvii, 244. Reference, H. T. Adlard, xxxvi, 391.
- THOMAS (E. C.), MANLY (H. W.) and LEWIS (J. N.).** On the Valuation of Staff Pension Funds, xxxvii, 193.
- THOMPSON (Dr. R. E.).** Tables extracted from "Family Phthisis", xxiv, 443. Reference, H. Westergaard, xxxi, 375.
- THOMSON (H. A.).** On the Treatment of Endowment Assurance Policies in Periodical Valuations, xxxiv, 1.
- Appointment as Honorary Sub-Editor of the *Journal*, xxxiii, 432.
- THOMSON (S. C.).** Address to the Actuarial Society of Edinburgh on Selection, xxi, 170.
- THOMSON (R. T.).** On Compensation to Workmen for Accidents, xxxvi, 555.
- THOMSON (W. T.).** On the Mortality amongst Lives selected at Ages 75 to 81 for Government Annuities, i, 29*.
- What is the Mean Rate of Interest Prevailing, and Likely to Prevail hereafter, in this Country and on the Continent? i, 375.
- On Decimal Numeration and Decimal Coinage, iv, 216.
- "Notes on the Pecuniary Interests of Heirs of Entail, with Calculations regarding such Interests in reference to the Acts of Parliament affecting Entails, and Tables showing the Values of Life Rent Interests." *Review*, i, 103*.
- "Actuarial Tables, Carlisle 3 per-cent: Single Lives and Single Deaths; with Auxiliary Tables." *Review*, iii, 340. On the Facilities afforded by them in making certain Calculations, R. Tucker, v, 255. References, F. Hendriks, i, 12*; J. Chisholm, xiv, 211.
- Extracts from his Suggestions in regard to the Regulation of the Rate of Interest on Landed Securities, v, 45.
- TILT (R. R.).** On some Considerations suggested by the Large Number of Existing at the close of the Institute Observations of 1863, xxxii, 1. Reference, J. Stewart, xxxii, 266.
- "TIMES", Extracts from:—**
- Friendly Societies, xxiv, 301.
- Friendly Societies' Finance, xxviii, 236.
- TITLE TO POLICIES (Life Assurance),** Certificates of, T. B. Sprague, xxxiii, 378.
- TODD (B. H.).** "Life Assurance Investigation Tables, &c." *Review*, ii, 300. Reference, D. Chisholm, iii, 337.
- TODHUNTER (R.).** On Formulas for Graduation by Summation, xxxii, 378.
- T. G. Ackland's Paper (xxxiii, 68) On Rates of Mortality and Withdrawal: "Discontinuances", xxxiii, 273. Reference, T. G. Ackland, xxxiii, 362.
- On the Approximate Evaluation of the Integral for the Compound Survivorship Annuity $\bar{a}_{yz}^1 x$, xxxiii, 311.

TODHUNTER (R.)—continued.

- On an Approximation to the Rate of Interest yielded by a Bond bought at a Premium, xxxiii, 356.
- On the Requirements of the Life Assurance Companies Act, 1870, in regard to Valuation Returns, with some Notes on the Classification and Valuation of Special Policies, xxxv, 1.
- "Institute of Actuaries' Text Book, Part I: Interest, including Annuities—Certain." *Review* by A. Levine, xxxvi, 385. Errata, xxxviii, 99.
- **Reviews:**—
- Transactions of the Second International Actuarial Congress, xxxv, 135.
- Institute of Actuaries' Text Book, Part II: Life Contingencies, including Life Annuities and Assurances. Second Edition, by G. King, xxxvii, 101.
- British Offices' Life Tables (1893): Assured Lives and Annuitants. An Account of the Principles and Methods adopted in the Compilation of the Data, the Graduation of the Experience, and the Construction of Deduced Tables, xxxviii, 356.
- TOMPKINS (H.).** Remarks upon the Present State of Information relating to the Laws of Sickness and Mortality, as Exemplified in the Tables of Contributions, &c., used by Friendly Societies, iii, 7.
- Observations on the Sickness and Mortality Experience in Friendly Societies, v, 6, 15. References, S. Brown, v, 214, xi, 345; M. N. Adler, xii, 18; A. J. Findlaison, xxxi, 197.
- TONTINE AND MUTUAL ASSESSMENT SCHEMES (American).** T. B. Sprague, xxv, 300; H. W. Manly, xxvi, 182; W. Sutton, xxviii, 417.
- TONTINES,** Notes on the Early History of, F. Hendriks, x, 205.
- TRADITION QUESTION** in probabilities, A. Macfarlane, xxii, 356. *See also* Probabilities.
- "TRANSACTIONS OF THE SECOND INTERNATIONAL ACTUARIAL CONGRESS, LONDON, 1898."** *Review* by R. Todhunter, xxxv, 135.
- TRANSFER** of the Business of one Insurance Company to another, S. Younger, vii, 183; T. B. Sprague, vii, 301.
- TRANSFER OF LIFE POLICY,** T. B. Sprague, xxxiii, 385.
- TRANSLATIONS,** A. Quetelet's "On the Calculation of Tables of Mortality", S. Brown, iv, 27.
- W. Lazarus's "Progress and Position of Assurance Companies in Germany, in 1855", S. Brown, vii, 217, 289, viii, 45.
- E. De Parieu's "Twenty years' Interregnum in the Stadtholdership of the Seventeenth Century", F. Hendriks, viii, 205.
- F. Maurice's "On Interpolation; An Essay containing a simple Exposition of the Theory in its most useful practical applications, together with a general and complete demonstration of the methods of Quintisection of Briggs and Mouton for equal intervals; and of the process explained by Newton in his 'Principia', for intervals of any magnitude whatever", T. B. Sprague and J. Hill Williams, xiv, 1.
- H. Briggs's "Arithmetica Logarithmica." Parts of the Preface, J. Hill Williams, xiv, 73.
- A. M. Legendre's paper "On Briggs's method of Interpolation" in the *Commissaance des Temps* for 1817, J. Hill Williams, xiv, 84.
- Dr. M. Kanner's article "On the Determination of the average Risk attaching to the grant of Insurances upon Lives", G. Humphreys and J. Hill Williams, xiv, 439.
- "Laws of the German Life Assurance Institute", J. Hill Williams, xiv, 460.
- "On the condition and progress of the German Life Assurance Offices in the year 1867", G. W. Berridge, xv, 55.
- W. Lazarus's paper "On some Problems in the Theory of probabilities", T. B. Sprague and J. Hill Williams, xv, 245.
- G. Hopf's "Suggestions for Legislation to regulate the Calculation and Investment of the Reserve in Life Assurance Companies", D. A. Bunsted, xv, 270.
- M. von Baumhauer's "On the method of constructing Tables of Mortality (from Census Returns)", J. Hill Williams, xvi, 34.

TRANSLATIONS—*continued*.

- Dr. C. Breniker's paper "On the Risk attaching to the grant of Life Assurances", T. B. Sprague, xvi, 216, 285.
- Dr. T. N. Thiele's Treatise, "On a Mathematical formula to express the Rate of Mortality throughout the whole of life", T. B. Sprague, xvi, 313.
- Dr. T. Wittstein's Treatise, "On Mathematical Statistics and its application to Political Economy and Insurance", T. B. Sprague, xvii, 178, 355, 417.
- V. Senés' "Review of T. B. Sprague's Life Insurance in 1872", xvii, 291.
- W. Lazarus's "Rates of Mortality and their causes", T. B. Sprague, xviii, 54, 212.
- H. Stüssi's "On the Mortality of the Clergy", D. A. Bumsted, xviii, 343.
- Dr. A. Emminghaus's "Report on the Condition and Progress of German Life Insurance Companies in 1873", D. A. Bumsted, xix, 42. Ditto, in 1884, D. A. Bumsted, xxiv, 55.
- E. Maas's "Calculation of the Premiums and Reserves of Life Assurance Companies in England and France", F. A. Curtis, xix, 416.
- Dr. L. J. Keller's "Report on the Sickness from Small-pox among the Employees of the Austrian State Railway Company", T. B. Sprague, xx, 222.
- O. Schjoll's "Mortality Experience of the Norwegian General Widows' Fund", xxviii, 89.
- Dr. T. Wittstein's "Mathematical Law of Mortality", D. A. Bumsted, xxiv, 153, xxxiii, 399.
- Marco Besso's "Progress of Life Assurance throughout the world from 1859 to 1883" (Editorial), xxiv, 426.
- H. Westergaard's "The Employment of Interpolation in Statistics", D. A. Bumsted, xxxii, 276.
- A. Bégault's Report "On the Necessity for a Universal Notation", G. King, xxxiii, 1.
- J. Altenburger's "On the Grouping of Endowment Assurances for Valuation" (Editorial), xxxiv, 152.
- O. Schjoll's "On the calculation of the contributions to be made to an Annuity Fund for Widows and Children", xl, 200.

TRANSVAAL (South African Republic). Law regulating Assurance Companies, xxxii, 61.

TRANSVAAL WAR FUND, Valuation Report of the Council of the Institute on the Liabilities and Assets, as at 31 December 1901, xxxvii, 450.

TRIADIC COMBINATIONS OF FIFTEEN SYMBOLS, On, W. S. B. Woolhouse, x, 275.

TRUSTEE (Public). Bill for the appointment of a (Editorial), xxvi, 349.

TRUSTEE ACT, 1888 (Extracts), xxvii, 511.

TRUSTEES, Payment to, T. G. C. Browne, xxvii, 510.

— — *In re* Bellamy, xxvi, 134.

— — *In re* Flower and the Metropolitan Board of Works, xxvi, 144.

TUBERCULOSIS. See **Consumption**.

TUCKER (R.). On assurance on one life against another, during their joint lives and for n years longer, iv, 250.

— On the Value of Contingent Reversionary Interests, v, 162. Reference, T. B. Sprague, xiv, 419.

— On the methods pursued at the present day for estimating the value of Contingent Reversionary Interests, v, 239. Reference, T. B. Sprague, xiv, 419.

— On the facilities afforded by W. T. Thomson's Actuarial Tables in making certain calculations (approximation to the values of the single and annual premiums for reversionary annuity to A after the death of B, provided B die within n years), v, 255. Reference, H. A. Smith, v, 352.

— On Assurances against Issue, v, 350.

— On the Rates of Premiums required to provide certain Periodical Returns to the Assured, ix, 245. Reference, R. P. Hardy, xxxi, 276.

TUCKER (R.)—*continued.*

— On the proper mode of estimating the Liabilities of Life Insurance Companies, x, 312. References, T. B. Sprague, xi, 90, xv, 411, xvi, 231; H. W. Manly, xiv, 259; C. J. Bunyon, xvii, 8.

— Letter sending copy of legal decision in the time of Queen Elizabeth, xvi, 419.

TUCKETT (H.). Opinions on Modes of Valuation, iii, 289.

TURNBULL (A. H.). A. De Morgan's query about Interest accounts, x, 357.

TYNG (Rev. S. H., Jr.). Life Assurance does assure, xxiii, 139. *See also* T. M. Coan, xxiii, 128.

ULPIAN'S TABLE, F. Hendriks, ii, 224; W. B. Hodge, vi, 313; Dr. T. Young, vii, 14.

UNCOVENANTED SERVICE FAMILY PENSION FUND. Mortality Experience, 1837-1872, A. J. Finkelson, xviii, 153, 167. Tables deduced therefrom, T. H. Cooke, xix, 223.

UNDER-AVERAGE LIVES, Surrender Values of Assurances on, T. B. Sprague, xxiv, 359; D. Carment, xxx, 221.

— Experience of 34 Life Companies (American) upon 98 Special Classes of Risk. *Review* by J. D. Watson, xxxviii, 363.

— The Importance and Practicability of a Standard Classification of, Dr. S. W. Carruthers, xxxix, 306.

See also Extra Premiums, Invalid Lives, Mortality (3), and Surrender Value of Policies.

UNIFORM ACTION OF THE HUMAN WILL. *See* Human Will.

UNIFORM SENIORITY, Law of, A. De Morgan, viii, 181; W. S. B. Woolhouse, xv, 399, xxviii, 481; G. King and G. F. Hardy, xxii, 211; W. M. Makeham, xxviii, 156; R. Henderson, xxxii, 293; J. M. Allen, xxxiii, 535; A. Levine, xxxiii, 538, xl, 302; G. J. Lidstone, xl, 303. *See also* Force of Mortality.

UNION MUTUAL Life Insurance Company (Portland, Maine). Dr. T. A. Foster's Report upon Death Losses. *Review* by T. B. Sprague, xxv, 251.

UNITED KINGDOM, History of Life Assurance in. *See* History of Life Assurance.

UNITED KINGDOM Temperance and General Provident Institution, Comparative Mortality of Abstainers and Non-Abstainers, R. M. Moore, xxxviii, 213.

UNITED STATES. *See* Foreign Intelligence.

UNIVERSITY OF LONDON. Insurance included among the subjects of the Examination for the degree of "B.Sc.", T. E. Young, xxxvi, 392.

UNLIMITED LIABILITY, Sir F. M. Eden, iv, 355.

USURY, On the meaning of the word, W. B. Hodge, vi, 302.

VACCINATION, Dr. S. H. Ward, viii, 339; H. W. Porter, ix, 151; A. F. Burridge, xxxvii, 245.

— Does it afford any protection against Small-pox? T. B. Sprague, xx, 216.

See also Public Health.

VALENTINE (J.). A Comparison of Reserves brought out by the use of different Data in the Valuation of the Liabilities of a Life Office, xviii, 229. References, J. M. McCandlish, xx, 19; G. King, xx, 251.

— Account of the Life Insurance Acts of the Colonies of Tasmania, New Zealand, and Canada, xx, 441.

"VALUATION OF LIFE CONTINGENCIES" (E. Sang). *Review*, xii, 110.

VALUATION OF LIFE POLICIES, arranged in the following order:

- (1) Dealing with the Methods or Machinery of Valuation.
- (2) Dealing with the Results of the Process of Valuation; Comparative Reserves under certain tables or assumptions.
- (3) General Remarks which do not appear to fall in either of the above Categories.

(1.) *Methods of Valuation.*

Gross Premium Method, C. Jellicoe, iii, 185.

By means of Tables of Single and Joint Lives, C. J. Hargreave, iii, 209.

Retrospective Method, J. Meikle, iii, 277, xi, 245; W. M. Makeham, xv, 451; F. Bell, xxxix, 17.

VALUATION OF LIFE POLICIES. (1.) *Methods of Valuation—continued.*

- To provide a permanent fixed rate of reversionary bonus, T. B. Sprague, vii, 69.
- Classification Method for Whole-Term Assurances on Single Lives, J. Coles, vii, 179.
- Re-Assurance Method, R. Tucker, x, 312; T. B. Sprague, xi, 90, xv, 131, xvi, 234*n*; A. H. Bailey, xxv, 202; J. A. Higham's Modified System, xxii, 43; A. Day, xxv, 403; H. C. Thiselton, xxviii, 487; F. B. Wyatt, xxx, 151.
- Pure or Net Premium Method, T. B. Sprague, xi, 90, xv, 411, xvi, 234*n*, xxi, 135; W. M. Makeham, xv, 119; A. H. Bailey, xxi, 115; J. A. Higham, A. Baden and T. B. Sprague, xxii, 43.
- With reference to the American Insurance Law, E. Wright, xvi, 355.
- As modified by anticipation of Loading, J. M. McCandlish, xx, 12; T. B. Sprague, xxi, 136, xxii, 414; W. Sutton, xxviii, 181; A. H. Bailey, xxviii, 348; H. P. Calderon, xxviii, 394; H. J. Rothery, xxx, 141; H. W. Manly, xxx, 150; D. Carment, xxx, 225.
- As affected by Increased Mortality, T. B. Sprague, xxi, 77.
- As affected by Expenses and Selection, J. Sorley, xxi, 192.
- As affected by recent tendencies and developments, S. G. Warner, xxxvii, 57.
- For Surrender, J. R. Macfadyen, xvii, 381; G. S. Crisford, xxi, 301; F. W. Fulford, xxxv, 199.
- Mixed Method, W. T. Gray, xx, 309.
- As calculated by means of a Model Office, D. Carment, xxi, 74.
- Select Values, T. B. Sprague, xxi, 229, xxii, 391, 407; G. King, xl, 1; O. F. Diver, xl, 15; T. G. Ackland, xl, 42; D. C. Fraser, xl, 122.
- Policies on Damaged Lives, T. B. Sprague, xxii, 422.
- Policies subject to half-yearly and quarterly premiums, G. King and T. B. Sprague, xxiii, 256, 264; J. Chisholm, xxv, 153.
- Formulas for Valuing Endowment Assurances, G. King, xxv, 156.
- Office Premium Loadings; how they are dealt with under various Methods of Valuation, G. S. Crisford, xxv, 184, 387.
- Approximate Method of Calculation, W. S. B. Woolhouse, xxvii, 433; J. Chisholm, xxvii, 442.
- Class-list Valuation, where separate value of the sums assured and premiums are not required, T. J. Searle, xxx, 557.
- Transformation of Values from H^M to $H^{M(5)}$ Mortality, T. J. Searle, xxx, 559.
- Policies subject to Contingent Debts, D. Carment, xxxi, 72.
- On a Method of exhibiting the results, showing, for each age to be subsequently attained, the present values of the total sums at risk then emerging, and those of the Premium to be then received, R. P. Hardy, xxxi, 113.
- On a Method of Valuation that will produce a definite Reserve at the end of a fixed period, and when the rate of interest yielded upon the accumulations varies annually throughout such period, R. P. Hardy, xxxi, 325.
- For Solvency in Life Assurance Companies, as affected by guaranteed Benefits, G. H. Ryan, xxxii, 28.
- Endowment Assurance Policies for Solvency in Life Assurance Companies, E. Woods, xxxii, 58.
- Methods of Grouping Policies for Valuation, F. Schooling, xxxii, 301.
- Endowment Assurances, H. A. Thomson, xxxiv, 1; G. J. Lidstone, xxxiv, 61, 510, xxxviii, 1, 47; G. F. Hardy, xxxiv, 87; J. Altenburger, xxxiv, 150, xxxv, 332; T. G. Ackland, xxxviii, 61. Whole-Life Assurances, D. C. Fraser, xxxviii, 385.
- Double Endowment Assurances, A. Fraser, xxxiv, 102.
- System for Industrial Insurances, F. Schooling, xxxii, 301; C. H. E. Rea, xxxiv, 112.
- On Valuation Methods, W. R. Dovey, xxxiv, 346.
- Method represented by the formula ${}_nV_x = 1 - (P_x + d)a_{x+n}$, R. Todhunter, xxxv, 6.

VALUATION OF LIFE POLICIES. (1.) *Methods of Valuation—continued.*

Method of valuing by prepared Tables of Policy-Values, R. Todhunter xxxv, 7. Accumulation Method represented by the formula

$$(1+i)({}_nV+P) - \frac{q}{p} \{1 - (1+i)({}_nV+P)\}, \text{ R. Todhunter, xxxv, 8.}$$

American Methods, W. A. Hutcheson, xxxvii, 95.

Various Methods in Use in the United Kingdom, G. H. Ryan, xxxviii, 69.

Whole-Life Industrial Assurances, with Allowance for Lapses, T. G. Ackland and J. Bacon, xxxviii, 539, 601.

(2.) Reserves according to Different Tables of Mortality and Rates of Interest.

Reserves made by Life Assurance Companies in 1855: Table of percentage of Reserves to Sums Assured of thirteen Companies, C. Jellicoe, v, 51.

Reserves, Table of, used by the Gotha Life Office, from its Commencement to 1855 and after, v, 62.

— As affected by Withdrawals, W. T. Gray, xxiv, 256.

— As affected by Using the Lapse Element in calculating, A. Hunter, xxxvi, 51.

— Model Office, and the Relation of Bonuses thereto, J. Buchanan, xxxix, 257.

Comparison of the Values of Policies by various Tables of Mortality and Different Methods of Valuation, H. W. Manly, xiv, 249.

Policy-Value and the Rate of Interest, On the relation between, W. Sutton, xvii, 227; W. G. Walton, xxii, 135.

Comparative Reserves, $HM^{(5)}$ Experience, with HM Pure Premiums, and various other Data, J. Valentine, xviii, 233.

— By the Northampton, Carlisle, Experience, "New Experience" and Duvillard's Tables, F. A. Curtis, xix, 426.

— By HM , $HM^{(5)}$, Seventeen Offices, and Carlisle Tables, as brought out by various Methods of Graduation, W. Sutton, xx, 184.

— By Select and HM Tables, G. King, xxii, 446; J. Chisholm, xxv, 141.

Comparative Reserves, HM with Analyzed, and HM and $HM^{(5)}$ with Analyzed, R. R. Tilt, xxxii, 17.

— By HM , $HM^{(5)}$, OM and $OM^{(5)}$ Tables, and Different Rates of Interest, G. King, xxxvii, 453.

— By $OM^{(5)}$ Select, OM and $OM^{(5)}$ Aggregate, and $H^{(M)}$ Select Tables, G. King, xl, 12.

Negative Policy-Values, J. J. W. Deuchar, xix, 97; W. T. Gray, xx, 73, 150; G. King, xx, 148.

Policy-Value with allowance for selection, G. W. Berridge, xix, 351.

— When the premium valued is altered, G. King, xx, 257.

— As affected by Rate of Interest, T. B. Sprague, xxi, 89-94; G. H. Ryan, xxxii, 272.

— As affected by Increased or Decreased Mortality, J. Sorley, xxii, 337; G. F. Hardy and H. J. Rothery, xxvii, 183; G. H. Ryan, xxx, 8; G. J. Lidstone, xxxix, 209.

Endowment Assurance Policy-Values, Formulas for, D. J. A. Samot, xx, 344.

— Single and Annual Premiums, HM 3 per-cent, H. A. Smith, xxii, 143.

— Table of HM 3 per-cent, Application of the Arithmometer to the Construction of, D. Carment, xxii, 368.

— Table of HM $2\frac{1}{2}$ per-cent, Constructed on the Arithmometer, A. D. Besant, xxxi, 366.

Formula for Policy-Values in terms of Premiums, R. Wilding, xxii, 131.

Select (or Recently Assured) Lives, R. Teece, xxii, 250; T. B. Sprague, xxii, 416.

Damaged Lives, T. B. Sprague, xxii, 422.

Under-Average Lives, J. Meikle, xxiii, 389, 399.

Extra Risks, G. H. Ryan, xxiv, 19; F. W. White and W. J. H. Whittall, xxiv, 390.

VALUATION OF LIFE POLICIES. (2.) *Reserves according to Different Tables of Mortality and Rates of Interest—continued.*

- Tables for Finding Values of Policies of all Durations, according to any Table of Mortality or any Rate of Interest, J. Chisholm, xxv, 368.
 West Indian Lives (chiefly Barbados), G. F. Hardy and H. J. Rothery, xxvii, 185.
 Consumptive Lives, H. W. Manly, xxx, 97.
 Method of approximating to the effect of a reduction in the rate of interest in calculating Reserves under Whole-Life Policies, J. Stewart, xxxii, 260.
 Pure Premium Policy-Values as affected by variations in the Rate of Interest, or the Rate of Mortality, or by the Introduction of the Rate of Discontinuance, G. J. Lidstone, xxxix, 209.

(3.) *General Remarks.*

- Policy Value, On the Relation between it and the Compound Interest of the Sum Assured, E. J. Farren, i, 92*, 355.
 — In connection with the purchase of a Life Interest, T. B. Sprague, viii, 12; W. D. Biden, x, 260.
 — As an Investment, A. Day, viii, 326; W. D. Biden, x, 258.
 — To the Assured, W. D. Biden, x, 255. Extract from *Insurance Monitor* of New York, xxii, 132.
 — To a Creditor of the Assured, W. D. Biden, x, 256.
 — In connection with purchase of Contingent Reversion, W. D. Biden, x, 266.
 — J. Meikle, xi, 241. Problem by A. De Morgan, xiv, 69. Solution, T. Marr, xiv, 156.
 — On the longest of two lives, T. Carr, xiv, 415.
 — On the Construction of Policy-Values, Dr. Zillmer, xv, 26; H. W. Manly, xv, 169; H. A. Smith, xvi, 75; G. King, xx, 258.
 — For proof in liquidation, C. J. Bunyon, xvii, 1, xviii, 32.
 — In Bankrupt Life Insurance Companies (reprinted from the *Spectator* of New York), xxiii, 306.
 — In relation to Mortality Tables, J. Meikle, xxiii, 385.
 — Its proportion to the total premiums paid, H. J. Rothery, xxx, 139.
 The relation which should obtain between the Reserve and the amount assured, C. Jellicoe, v, 100.
 Use of the "Table of Quarter-Squares" for forming a Table for Policy-Values, S. L. Laundy, ix, 112.
 On the rejection of the fractions of £1 in Life Office Valuations, A. De Morgan, x, 247.
 Valuation of Insolvent Companies, A. H. Bailey, xvi, 389; G. King, xxix, 523; C. D. Higham, xxix, 529.
 Under-Average Risks, J. R. Macfadyen, xvii, 77; W. O. Nash, xxix, 434; G. H. Ryan, xxix, 437; A. H. Bailey, xxix, 438; B. Newbatt, xxix, 442.
 Economical Rates of Reserve and Premium (Extracted from the *Spectator* of New York), xviii, 428.
 Principles to be observed in Valuations made with a view to Distribution of Profits, J. M. McCandlish, xx, 12.
 State Standard of Solvency, R. Teece, xxv, 350; G. King, xxix, 484; S. Homans, xxix, 530.
 Suggested amendment of Valuation Returns (5th and 6th Schedules) under the "Life Assurance Companies Act", G. King, xxix, 498; R. Todhunter, xxxv, 11.
 System of Bonus Distribution considered in relation to Method of Valuation, H. J. Rothery, xxx, 131.
 On the Books and Forms to be used for Periodical or Interim Valuations, J. Chatham, xxxii, 393.
 On the effect of an estimated allowance for Withdrawals, T. G. Ackland, xxxiii, 175.
 Whole-Term Policies, with limited number of Premiums, Values at H^M 3 per-cent, A. S. Hume and W. Stott, xxxiv, 397-412.
 Standards of Valuation of Colonial Life Offices, A. W. Tarn, xxxiv, 533.
 Sinking Fund Assurances, J. E. Faulks, xxxiv, 568.

VALUATION OF REVERSIONS. *See* Reversions.

VALUATION OF STAFF PENSION FUNDS. *See* Pension Funds.

VALUE OF OPTIONS. *See* Options.

VEGETARIANS, On their Average Longevity, Dr. T. W. Forster, vii, 148.

VICTORIA, Population of, in 1858, viii, 314.

— Life Assurance Companies Act, 1873, xx, 59.

— Mortality in, A. F. Burrbridge, xxiii, 309.

— Rate of Mortality from Various Classes of Diseases in, 1873, A. F. Burrbridge, xxiii, 314.

— Census Returns (1836-1881), A. F. Burrbridge, xxiii, 310; (1870-1881), A. F. Burrbridge, xxiv, 337.

— On the Rates of Mortality in, E. M. Moors and W. R. Day, xxxvi, 151.

See also Colonial Intelligence.

"VICTORIAN YEAR BOOK." Reference, A. F. Burrbridge, xxiii, 310.

VICTORIA, R.I., Speech by the President on the death of, xxxvi, 1. Memorial to H.M. King Edward VII, xxxvi, 3.

VIOLEINE (P.), On his Solution of a Problem on the Rate of Interest in Loans repayable by Instalments, P. Gray, xiv, 397.

VITAL STATISTICS, Report on, to the American Life Underwriters' Convention, S. Homans, ix, 235.

— Canadian, M. D. Grant, xl, 125.

"VITAL STATISTICS", (F. G. P. Neison, Sr.). References, H. Tompkins, v, 9; G. F. Hardy, xxvii, 284.

— (Dr. W. Farr), Edited by N. A. Humphreys. (*Notice of Publication*), xxv, 368.

VOLUNTARY SETTLEMENTS (of Life Policies), A. R. Barrand, xxxiii, 219; G. J. Lidstone, xxxv, 371.

VOLUNTEERS. *See* Yeomanry and Volunteers.

WAGNER (Dr. A.), Notice of his work on the Law prevailing in the Acts apparently under the Control of the Human Will, from a statistical point of view, W. Lazarus, xii, 183.

WALES. *See* England and Wales.

WALFORD (C.), On Female as contrasted with Male Lives, xix, 174.

— On the Scientific Application of Data to the purpose of deducing Rates of Premium for Fire Insurance, xxi, 1. Reference, T. Miller, xxii, 103.

— A Suggestion towards adding a new feature of usefulness to the Institute of Actuaries of Great Britain and Ireland (Register for Declined Lives), xxii, 1. References, T. B. Sprague, xxii, 17; Author, xxii, 153.

— The Position of Life and other Insurance Associations in relation to their Local Medical Examiners: Is it satisfactory? xxii, 153. Correspondence (extracted from *Insurance Record*) on this paper, Dr. J. F. Arldige, T. B. Sprague and G. S. Crisford, xxii, 180.

— The Position of the Insurance Press in Relation to Insurance Offices and Insurance Interests, xxiii, 18.

— History of Life Assurance in the United Kingdom (Samuel Brown Prize Essay, 1881), xxv, 114, 207, 257, 433, xxvi, 1, 120, 302, 436. Reference (Editorial), xxvi, 357.

— "Insurance Guide and Handbook; being a Guide to the principles and Practice of Life Assurance, and a Handbook of the best Authorities on the Science, &c." *Review*, xiv, 409.

— "Insurance Cyclopædia" (Diseased Lives), Reference, A. F. Burrbridge, xxiv, 413.

— Obituary Notice of, xxv, 367.

"WALFORD'S INSURANCE CYCLOPÆDIA", Vols. i. and ii. (Reprinted from the *Glasgow Medical Journal*). *Review*, xix, 69.

WALKER (D.), Value of Endowment Assurance on Joint Lives, xxv, 136.

WALTON (W. G.), On the Relation between the Value of a Policy and the Rate of Interest, xxii, 135.

WARBURTON'S THEORY regarding the rate of taxation of Temporary Annuities, P. Hardy, iii, 196.

- WARD (R. A.).** "Treatise on Investments; being a popular exposition of the advantages and disadvantages of each kind of Investment, and of its liability to depreciation and loss." *Review*, iii, 265.
- WARD (Dr. S. H.).** On the Medical Estimate of Life for Life Assurance, viii, 248, 329. Letter as to the Authorship of the work, T. Fraser, viii, 357.
- WARFARE.** Comparative Losses of Life from Pestilence and War, being a statement made up from official returns for the use of the Board of Health, iv, 261.
- On the Mortality arising from Naval Operations, W. B. Hodge, vi, 251.
- On the Mortality arising from Military Operations, W. B. Hodge, vii, 80, 151, 201, 275.
- Assurance Risks of, A. H. Smee and T. G. Ackland. *Review* by H. J. Rothery, xxviii, 163.
- Mortality in the British Navy and Army, J. J. McLauchlan, xxxiv, 262, 270.
- On the Assurance Risks incident to Professional Military and Naval Lives; and the Rates of Extra Premiums which should be charged for such Risks, A. H. Smee and T. G. Ackland, xxxiv, 358.
- Mortality Experience of the Imperial Forces in the South African War, 1899-1902, F. Schooling and E. A. Rusher, xxxvii, 545.
- WARNER (S. G.).** Reversionary Interests contingent on survival of the Reversioner, xxxi, 280.
- Some Notes on the Net Premium Method of Valuation, as affected by recent tendencies and developments, xxxvii, 57.
- WASHINGTON LIFE OFFICE,** Mortality Experience of, G. H. Ryan, xxviii, 220; (Consumptive Lives), H. R. Harding, xxx, 129; T. B. Macaulay, xxx, 336.
- WATSON (A. W.).** The Methods of Analyzing and Presenting the Mortality, Sickness and Secession Experience of Friendly Societies, with Examples drawn from the Experience of the Manchester Unity of Oddfellows, xxxv, 268.
- On Compensation to Workmen for Accidents, xxxvi, 559.
- "An Account of an Investigation of the Sickness and Mortality Experience of the I.O.O.F. Manchester Unity Friendly Society, during the Five Years 1893-1897." *Review* (Editorial), xxxviii, 369. Graduation of the Experience, J. Spencer, xxxviii, 331.
- WATSON (J. D.).** Vaccination and the Act of 1898 (Remarks on A. F. BurrIDGE's Paper), xxxvii, 295.
- *Review*:—
- "Experience of Thirty-four Life Companies upon Ninety-eight Special Classes of Risks. Compiled and Tabulated by the Actuarial Society of America, New York, 1903", xxxviii, 363.
- WATKINS (C.).** On T. Galloway's Method of Adjusting his Tables, vi, 178, 360.
- WEDDLE (T.).** On Annuities and Assurances on Successive Lives (Reprinted from the *Philosophical Magazine*), xiii, 221. See also **P. Gray**, ii, 1.
- WEIGHT,** Table of Normal Weight for various Heights, Dr. Hutchinson, i, 88*.
- In Relation to Height, T. B. Macaulay, xxiii, 62. Reference, T. B. Sprague, xxiii, 65.
- WEIGHTING,** Methods of, On the Determination of Average Age by, S. E. Macnaghten, xl, 120.
- WEIGHTS AND MEASURES,** L. Levi, x, 337.
- Metric System of, Sir C. W. Pasley, vi, 250; S. Brown, vii, 42, xi, 263.
- Plan for Simplification and Improvement, Sir C. W. Pasley, vi, 241.
- On the Advantages of a Uniform Decimal System, S. Brown, vii, 37.
- And Decimal Numeration, W. T. Thomson, iv, 216; A. M. Robertson, iv, 370, 373.
- WELLS (D. H.).** "Mortality Experience of the Connecticut Mutual Life Office." (*Notice of Publication*), xxv, 368. References, G. H. Ryan, xxvi, 253, 275, xxviii, 221; B. Newbatt, xxvii, 190; J. Chatham, xxix, 85, 122; W. J. H. Whittall, xxxi, 181.

- WELTON (T. A.).** On the effect of Migrations in distributing Local Rates of Mortality, as exemplified in the Statistics of London and the surrounding Country, for the Years 1851-1860, xvi, 153.
- WEST AFRICA.** *See* Foreign Intelligence.
- WESTERGAARD (H.).** Notes on the Mortality of Danish Clergy from 1650 to 1878, xxiii, 29, 40.
- Some Remarks on the Mortality among Persons with Consumptive Family History, xxxi, 375.
- The Employment of Interpolation in Statistics. Translated and abridged by D. A. Bumsted, xxxii, 276.
- WESTERN AUSTRALIA.** Life Assurance Companies Act, 1889, xxix, 32.
See also Colonial Intelligence.
- WEST INDIES,** Mortality among European Troops during Years 1840 to 1848. (Parliamentary Return), i, 79.
- On the Extra Premium for Residence in, J. Meikle, xix, 275.
- Mortality of Assured Lives in, S. C. Thomson, xxi, 181.
- Population Statistics, G. F. Hardy and H. J. Rothery, xxvii, 162.
- Mortality in (chiefly Barbados), G. F. Hardy and H. J. Rothery, xxvii, 161. (Scottish Amicable), J. Stott, xxi, 153.
- Work and Development of Barbados Mutual Office, A. W. Tarn, xxxiv, 519.
See also Colonial Intelligence.
- WHEWELL (Dr.).** Extract from his "Novum Organum Renovatum", with reference to the "Graphic Method", T. B. Sprague, xxx, 161.
- WHITE (F. W.) and WHITTALL (W. J. H.).** On Extra Mortality, xxiv, 385. References (Editorial), xxiv, 443; B. Newbatt, xxix, 412; A. Levine, xxxiv, 514.
- WHITTALL (W. J. H.).** On the Rates of Fatal Accidents in various occupations, xxiii, 188. Reference, J. Nicoll, xxxvi, 485.
- On the Method of deducing the Rate of Mortality from the Experience of Assured Lives; with some mention of a Method adopted in investigating the Experience of the Clerical, Medical and General Life Assurance Society, xxxi, 161. Reference, T. G. Ackland, xxxiii, 70, 132, 363.
- WHITTALL (W. J. H.) and WHITE (F. W.).** On Extra Mortality, xxiv, 385. References (Editorial), xxiv, 443; B. Newbatt, xxix, 412; A. Levine, xxxiv, 514.
- WHOLE-LIFE ASSURANCES,** A Comparison of the various Methods of Grouping for Valuation, D. C. Fraser, xxxviii, 385.
- On the Valuation of, by means of Select Mortality Tables, G. King, xl, 1; O. F. Diver, xl, 15; T. G. Ackland, xl, 42; D. C. Fraser, xl, 122.
- WHOLE-LIFE INDUSTRIAL ASSURANCES,** Valuation, with allowance for Lapses, T. G. Ackland and J. Bacon, xxxviii, 539.
- WHOLE WORLD POLICIES,** H. C. Thiselton, xxxi, 34.
- WIDOWERS,** Rate of Re-marriage, T. B. Sprague, xxii, 77.
- Husbands and Bachelors in England and Wales (1881), G. King, xxx, 293.
- WIDOWS, of Miners,** Re-marriage among, T. Y. Strachan, xxvii, 48.
- Annuity to, on the Death of their Husbands, G. King, xxx, 308; E. C. Thomas, xl, 194; O. Schjoll, xl, 206.
- WIDOWS' AND ORPHANS' FUNDS,** H. W. Manly and H. Foot, xxxviii, 101.
- Social Conditions as affecting, S. J. H. W. Allin, xxxix, 337, 367.
- On some Special Features of, E. C. Thomas, xl, 188.
- On the Calculation of the Contributions to be made by the members of a Society, all of whom, whether married or single, are obliged to contribute, O. Schjoll, xl, 200.
- WIDOWS AND SPINSTERS.** Rates of Marriage among, T. B. Sprague, xxii, 352.
- WIDOWS' FUND (Norwegian),** Mortality Experience of, O. Schjoll, xxviii, 89.
- WIDOWS' FUNDS,** Huic's Work on their Valuation. Reference, T. B. Sprague, xxii, 78.
- A. Gillies Smith's Report on, among Writers to the Signet. Reference, T. B. Sprague, xxii, 92.
- J. Meikle's "Report on the Ministers' Widows' Fund (Church of Scotland), 1875", T. B. Sprague, xxii, 352.
- Mortality and Marriage Experience of the Funds of the Scottish Banks, A. Hewat and J. Chatham, xxxi, 428. Reference, G. J. Lidstone, xxxix, 365.

- WIEGAND (Dr. A.).** On P. Gray's Demonstration of Formulas for single and annual premiums, x, 286.
- On the payment of $\frac{1}{m}$ yearly premiums, xii, 51. *See also* S. L. Laundry, xii, 55.
- On the Autagonism between Theory and Practice, xv, 28.
- "On Assurance against permanent Incapability: a complete set of Tables for the Computation of Premiums, and the sums to be reserved for Assurance against Invalidity", W. Lazarus, xii, 183.
- "Invalidity Tables", W. Lazarus, xv, 143.
- WILBRAHAM (H.).** Observations on C. Jellicoe's paper (vi, 61). On the Valuation of Property held for life and in Reversion, and on the due apportionment of it, when so held on the same life, between the Tenant for life and the Remainderman, vi, 211.
- On the possible Methods of Dividing the Net Profits of a Mutual Life Assurance Company amongst the members, vi, 278. Reference, T. B. Sprague, vii, 66.
- WILDE (W. R.).** A short account of the Early Bills of Mortality in Dublin, iii, 248.
- WILDING (R.).** On an Error in Factorial Notation in Boole's "Finite Differences", xxii, 60.
- The Market Value of an Annuity, xxii, 61.
- Smart's Interest Tables, xxii, 129.
- Formulas for Policy Values in terms of Premiums, xxii, 131.
- WILLIAMS (J. HILL).** On Property and Income Tax, iii, 168.
- Briggs's Method of Interpolation; being a translation of the 13th Chapter and part of the 12th, of the *Preface to the Arithmetica Logarithmica*, xiv, 73.
- Translation of Legendre's Paper, in the *Connaissance des Temps* for 1817, on Briggs's Method of Interpolation, xiv, 84.
- Translation of the Laws of the German Life Assurance Institute, xiv, 460.
- Translation of M. von Baumhauer's method of constructing Tables of Mortality, xvi, 34.
- Obituary Notice of, xxvi, 218.
- WILLIAMS (J. HILL) and HUMPHREYS (G.).** Translation of Dr. M. Kanner's Article "On the Determination of the Average Risk attaching to the grant of Insurances upon Lives", xiv, 439.
- WILLIAMS (J. HILL) and SPRAGUE (Dr. T. B.).** Translation of F. Maurice's Essay on Interpolation, xiv, 1.
- WILLICH (C. A. M.).** Formulas for the Expectation of Life according to the Carlisle Table, vii, 181. English Table (Males), viii, 139.
- Annuities on Lives. (Formula for value of a life annuity which is to yield a purchaser a certain rate of interest, and enable him to invest the surplus income at another given rate so as to replace the capital), vii, 273.
- "Popular Tables, arranged in a new form, giving information at sight for ascertaining, according to the Carlisle Table of Mortality, the value of Lifehold, Leasehold and Church Property, Renewal Fines, &c." *Review*, iii, 341. Ditto, Fourth Edition, viii, 349.
- "The Public Funds, Annual Average Price and Interest on Consols from 1731 to 1851, also various interesting and useful Tables, equally adapted to the Office and the Library Table." *Review*, iii, 341.
- WING (A. S.).** "Mortality Experience of the Provident Life and Trust Company of Philadelphia, 1866 to 1885." *Review* by T. B. Sprague, xxvi, 316.
- WITHDRAWAL,** Premiums Returnable at Death or, W. M. Makeham, xii, 233. *See also* xiii, 109.
- On the Value of the Option of, in Deferred Annuity Contracts, W. B. Paterson, xxvi, 465.
- Rate of, in the Pole Star Life Insurance Company of Stockholm, T. B. Sprague, xxvi, 472.
- See also* Discontinuances.

- WITTSTEIN (Dr. T.).** On Mathematical Statistics and its Application to Political Economy and Insurance. Translated by T. B. Sprague, xvii, 178, 355, 417. References, P. Gray, xx, 189; W. Lazarus, xx, 432.
- **The Mathematical Law of Mortality.** Translated by D. A. Bunnsted, xxiv, 153, xxxiii, 399. Reference, G. F. Hardy, xxxiii, 490.
- WIVES AND HUSBANDS.** See **Husbands and Wives.**
- WOODS (ERNEST).** On Valuation of Endowment Assurance Policies for Solvency in Life Assurance Companies, xxxii, 58.
- WOOLHOUSE (W. S. B.).** Observations on Gompertz's Law of Mortality, and the Dependence between it and Simpson's Rule for finding the value of an Annuity on Three Lives, x, 121, xv, 399. References, A. De Morgan, x, 237; Author, xiii, 101. See also **A. De Morgan**, viii, 181, x, 27.
- On Triadic Combinations of Fifteen Symbols, x, 275.
- On Interpolation, Summation, and the adjustment of Numerical Tables, xi, 61, 301, xii, 136. References, Author, xiii, 95, 98, 119; T. B. Sprague, xiii, 206, 309, xvi, 375, xvii, 267, xviii, 310; T. G. Ackland, xxxii, 289, 290.
- Note on the Possibility of the Division of the Law of Mortality into Geometrical Series, xi, 150.
- Cotton-Spinning Problem, xi, 224.
- On the Construction of Tables of Mortality, xiii, 75.
- On the Formula for Quadratures, xiii, 119.
- On an Improved Theory of Annuities and Assurances, xv, 95, 409. Errata and observations, Author, xviii, 151. References, W. Sutton, xv, 307; W. Evans, xix, 12.
- On General Numerical Solution, xv, 313. Reference, A. De Morgan, xv, 327.
- Explanation of a new Method of Adjusting Mortality Tables; with some observations upon Makeham's Modification of Gompertz's theory, xv, 389. References, W. M. Makeham, xvi, 411, xvii, 306; W. Sutton, xx, 175; J. Sorley, xx, 341; W. Lazarus, xx, 434; F. E. Colenso, xxxi, 350; (Editorial), xxxii, 294.
- On the Philosophy of Statistics, xvii, 37. Reference (Editorial), xvii, 191.
- On the Reduction of Formulæ for Annuities and Assurances investigated by T. B. Sprague on the common hypothesis of equal decrements in each year of life, xvii, 171.
- On the Adjustment of Mortality Tables, a sequel to former papers on the same subject, xxi, 37, 56. References, A. J. Finlaison, xxi, 49; E. L. de Forest, xxii, 231; J. Sorley, xxii, 313; J. A. Higham, xxiii, 335, xxxi, 323; C. D. Higham, xxvi, 50; G. King, xxvi, 279; J. Chatham, xxix, 107.
- Interpolation with Central Differences, xxi, 62.
- On a Question in Probabilities ("A says that B says that a certain event took place: required the probability that the event did take place, p_1 and p_2 being A's and B's respective probabilities of speaking the truth"), xxi, 204. Reference, A. Macfarlane, xxii, 356. See also **Prof. A. Cayley and Dr. T. B. Sprague.**
- Observations respecting portions of T. B. Sprague's paper on the Graphic Method (xxvi, 77), xxvi, 420. References, T. B. Sprague, xxix, 59, 232; Author, xxix, 236; (Editorial), xxxii, 376.
- Integration by means of Selected Values of the Function, xxvii, 122. References, A. W. Sunderland, xxvii, 510; J. Chatham, xxviii, 391.
- An easy method of getting out a Rough Estimate Valuation of a Whole-Life Assurance Business, xxvii, 433. References, G. H. Ryan; (application of Method to compute expected Claims), xxvii, 452; M. N. Adler, xxviii, 218; C. D. Higham, xxx, 201, 533; H. A. Thomson, xxxiv, 22.
- On Makeham's extensions of Gompertz's Law, xxviii, 481. Reference, G. H. Ryan, xxx, 6.
- Some further observations on the Method of adjusting Mortality Tables, xxix, 236.
- Reference to his Indian Mortality Tables, C. Jellicoe, i, 170.
- Obituary Notice of, G. H. Ryan, xxxi, 362.
- See also **Force of Mortality and Graduation.**

- WORKMEN'S COMPENSATION**, Actuarial Aspects of Legislation in regard to, J. Nicoll, xxxvi, 417.
- The Act of 1897. Reference, J. Nicoll, xxxvi, 126.
- WRIGHT (Hon. E.)**. His project of law to prevent forfeiture of policies, viii, 245.
- Sixth Report of the Insurance Commissioners, Massachusetts, ix, 270.
- On net-premium Valuations with reference to the American Insurance Law, xvi, 355.
- National Insurance Convention of the United States, 1871. Reference, G. H. Ryan, xxxii, 38.
- "Valuation Tables." Reference, D. Carment, xxii, 368.
- Obituary Notice of, xxv, 367.
- WYATT (F. B.)**. On the Rev. John Hodgson's Clergy Mortality Tables, xxviii, 489.
- WYLIE (W.)**. On a Method of obtaining, from a Table of Assumed "Whole-Life" Premiums, the Corresponding Table of Mortality, ii, 391.
- YATES (J.)**. On a Method of substituting Francs and Centimes for the present English Metallic Currency, v, 146.
- YEAR "O" OF ASSURANCE**. J. A. Higham, i, 186; T. B. Sprague, xv, 340, xx, 98, xxi, 231, 256, xxv, 256, xxvi, 474, xxxi, 220; W. Sutton, xvi, 76; G. W. Berridge, xix, 356; G. King, xix, 387, 411, xx, 242, xxi, 253; H. W. Manly, xix, 407, xxvi, 272; G. H. Ryan, xxvi, 258; G. Todd, xxvi, 267; J. Chatham, xxix, 98; G. F. Hardy, xxix, 182; J. Meikle, xxxi, 248.
- YEARS IN FORCE**, Meaning of the expression, H. W. Manly, xxxv, 99.
- YEOMANRY AND VOLUNTEERS**, Mortality Experience of Assured Lives during the War in South Africa, 1899 to 1902, F. Schooling and E. A. Rusher, xxxvii, 573.
- YORKSHIRE INSURANCE INSTITUTE**, Address delivered to. "Some of the Modern Developments of the Life Assurance System", B. Newbatt, xxxi, 1.
- YOUNG (Dr. T.)**. On the practical application of the Doctrine of Chances, as it regards the subdivision of Risks (from the *Quarterly Journal of Science*), vi, 287. Reference, T. B. Sprague, xiii, 28.
- A Formula for expressing the Decrement of Human Life, vi, 351, vii, 11. References, T. Carr, vii, 109; T. B. Sprague, xv, 129.
- YOUNG (T. E.)**. "Can a Law of Mortality be represented in a Mathematical Form?" xxii, 139. Reference, W. M. Makeham, xxviii, 316.
- Note on Determinants, xxvi, 149.
- Note on Dr. Bristowe's Article on Phthisis Pulmonalis, xxvi, 220.
- Demonstration of a Formula for applying Bonus to convert Whole-Life Policy into Endowment Assurance, xxvii, 368.
- On the Foundation of the Institute of Actuaries, xxviii, 436. Reference (Editorial), xxx, 313.
- The German Law of Insurance against Invalidity and Old Age; a history, analysis and criticism, xxix, 269. References, Sir E. W. Brabrook, xxx, 239; A. Hendriks, xxx, 285; J. Nicoll, xxxvi, 440.
- The Theory of Evolution applied to the system of Life Assurance and incidentally to Insurance generally (An address delivered before the Birmingham Insurance Institute), xxxii, 247.
- Presidential Address (November 1896), xxxiii, 97.
- Presidential Address (November 1897). The Origin and Development of Scientific and Professional Societies, with their bearing upon the Institute of Actuaries and its associated Profession, xxxiii, 453.
- The Origin and History of the Title of Actuary. (Appendix to Presidential Address 1897), xxxiii, 480.
- A Few Notes upon Certain Methods of Allotting Surplus, xxxvii, 46.
- "Are Events resulting from the exercise of the Human Will suitable for the Deduction of Serviceable Probabilities?" (Correspondence with H. Adan), xxxiii, 523.
- Review:—
- — "Algebra, an Elementary Text Book" (G. Chrystal), xxvi, 223.

YOUNG (T. E.)—continued.

— "On Centenarians, and the Duration of the Human Race; a fresh and Authentic Enquiry, with Historical Notes, Criticisms and Speculations." *Review* by A. Levine, xxxiv, 588.

— "Insurance: A practical exposition for the Student and the Business Man." *Review* (Editorial), xxxviii, 375.

YOUNG (T. E.) and STRONG (W. R.). Reviews:—

— "Mortality Experience of the Gotha Life Office, 1829-1878", xxxviii, 292.

— "The Amendment of the Basis of Calculation of the Gotha Life Office", by Dr. J. Karup, xxxviii, 373.

YOUNGER (S.). On the Determination of Surplus, iv, 249.

— On the use of the Integral Calculus in determining Averages, with certain applications to the Theory of Life Contingencies, vii, 71.

— On a Method of Testing the Solvency of an Assurance Company, with some Considerations respecting the Terms upon which a Society's Business may be purchased, vii, 183, 295. Reference, H. A. Smith, vii, 294, 353.

— On the Value of an Assurance payable at the Instant of Death, vii, 238.

— On a plan for making conditional the payment of extra premium in the case of a life supposed to be diseased or more than ordinarily hazardous, x, 268. References, Sir E. W. Brabrook, x, 349; H. A. Smith, x, 352, xi, 180; P. Gray, x, 354; A. W. Tarn, xxxiv, 540.

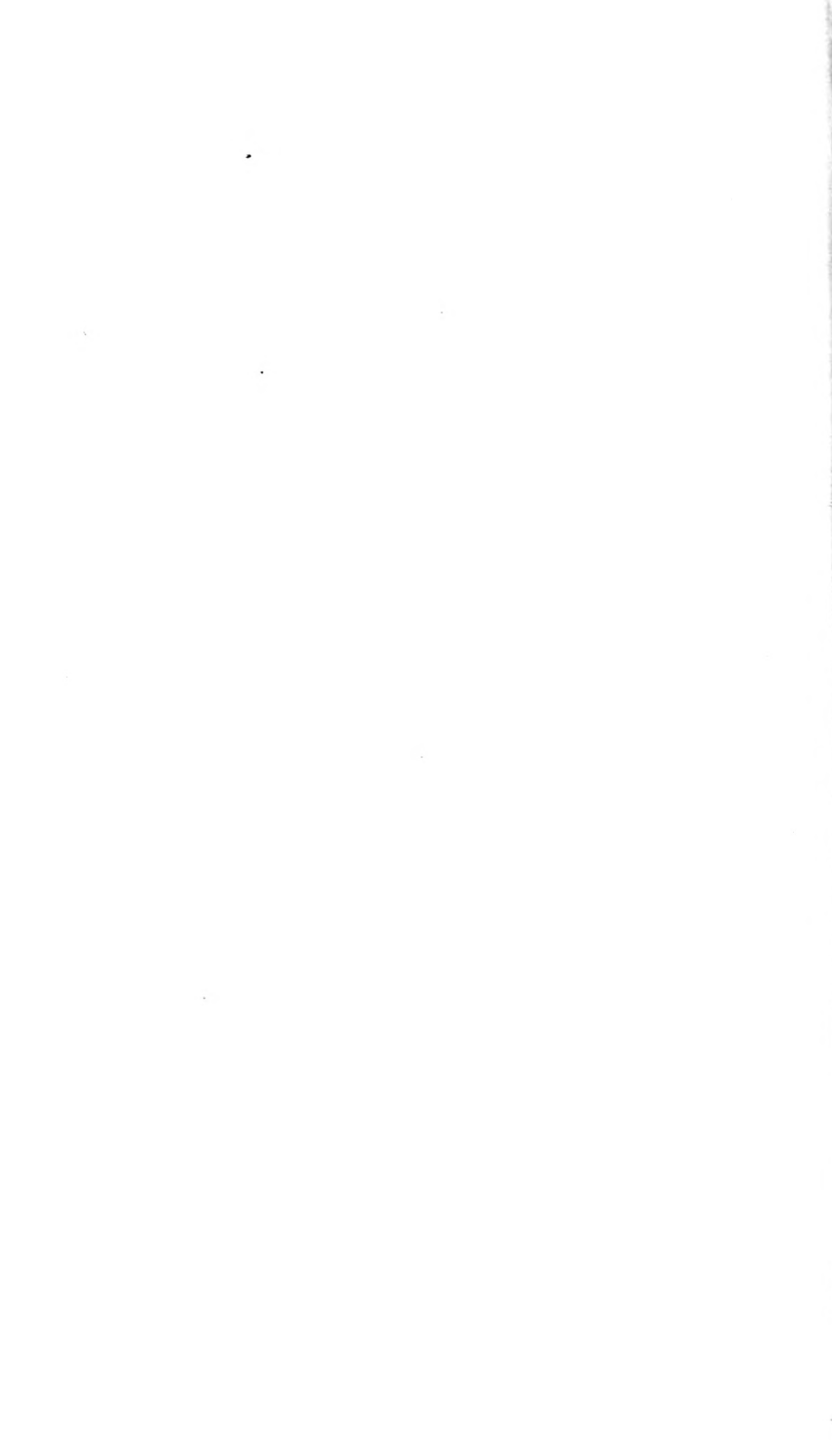
— On the Assurance of Invalid Lives, xi, 49.

— On the Value of Options in certain Contracts, xiii, 55, 118. References, P. Gray, xiii, 106; W. M. Makeham, xiii, 109; J. W. Stephenson, xiii, 111.

— On Ten Year Non-forfeiture Policies, xiv, 476, xv, 151. *See also* Paid-up Policies.

YULE (G. U.), BEETON (Miss M.) and PEARSON (KARL). Data for the Problem of Evolution in Man. V. On the Correlation between the duration of Life and the Number of Offspring, xxxv, 458.

ZILLMER (Dr.). On the Arithmometer of M. Thomas (de Colmar), xv, 25. Reference, H. W. Manly, xv, 177.



HG Institute of Actuaries,
8754 London
15 Journal
Index
v.1-49

PLEASE DO NOT REMOVE
CARDS OR SLIPS FROM THIS POCKET

UNIVERSITY OF TORONTO LIBRARY

